### WEB SERVICES

[As per Choice Based Credit System (CBCS) scheme]
(Effective from the academic year 2016 -2017)

**SEMESTER – II**

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>16SCS254 / 16SSE154 / 16LNI252 / 16SIT21</th>
</tr>
</thead>
<tbody>
<tr>
<td>IA Marks</td>
<td>20</td>
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<tr>
<td>Exam Marks</td>
<td>80</td>
</tr>
<tr>
<td>IA Hours</td>
<td>03</td>
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</tbody>
</table>

**Number of Lecture Hours/Week**

- 04

**Total Number of Lecture Hours**

- 50

**CREDITS – 04**

### Course objectives:

- Define and explain Web Services.
- Summarize WSDL Web Services.
- Analyze Web service Architecture.
- Explain Building Blocks of Web services.

### Module 1

**Teaching Hours**

- Middleware: Understanding the middle ware, RPC and Related Middle ware, TP Monitors, Object Brokers, Message-Oriented Middleware. 10 Hours

### Module 2

**Teaching Hours**

- Web Services: Web Services Technologies, Web Services Architecture. 10 Hours

### Module 3

**Teaching Hours**

- Basic Web Services Technology: WSDL Web Services Description Language, UDDI Universal Description Discovery and Integration, Web Services at work interactions between the Specifications, Related Standards. 10 Hours

### Module 4

**Teaching Hours**

- Service Coordination Protocols: Infrastructure for Coordination Protocols, WS-Coordination, WS-Transaction, Rosetta Net and Other Standards Related to Coordination Protocols. 10 Hours

### Module 5

**Teaching Hours**

- Service Composition: Basic of Service Composition, A New Chance of Success for Composition, Services Composition Models, Dependencies between Coordination and Composition, BPEL: Business Process Execution Language for Web Services, Outlook, Applicability of the Web Services, Web services as a Problem and a Solution : AN Example. 10 Hours

### Course Outcomes

The students should be able to:

- Bind and unbind services in UDDI.
- Develop WSDL document
- Implement web service client to call public service.
- Implement a service and exposing it as public service.

### Question paper pattern:

The question paper will have ten questions.
There will be 2 questions from each module.
Each question will have questions covering all the topics under a module. The students will have to answer 5 full questions, selecting one full question from each module.

### Text Books:


### Reference Books:

NIL
# CLOUD COMPUTING

[As per Choice Based Credit System (CBCS) scheme]
(Effective from the academic year 2016-2017)

**SEMESTER – II**

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<td>16SIT22/16SSE254</td>
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<td>16SCN22/16LNI151</td>
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<tbody>
<tr>
<td>50</td>
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</table>

**CREDITS – 04**

**Course objectives:** This course will enable students to
- Define and Cloud, models and Services.
- Compare and contrast programming for cloud and their applications
- Explain virtualization, Task Scheduling algorithms.
- Apply ZooKeeper, Map-Reduce concept to applications.

## Module 1

**Teaching Hours:** 10

**Introduction, Cloud Infrastructure:** Cloud computing, Cloud computing delivery models and services, Ethical issues, Cloud vulnerabilities, Cloud computing at Amazon, Cloud computing the Google perspective, Microsoft Windows Azure and online services, Open-source software platforms for private clouds, Cloud storage diversity and vendor lock-in, Energy use and ecological impact, Service level agreements, User experience and software licensing.

## Module 2

**Teaching Hours:** 10


## Module 3

**Teaching Hours:** 10


## Module 4

**Teaching Hours:** 10

**Cloud Resource Management and Scheduling:** Policies and mechanisms for resource management, Application of control theory to task scheduling on a cloud, Stability of a two-level resource allocation architecture, Feedback control based on dynamic thresholds, Coordination of specialized autonomic performance managers, A utility-based model for cloud-based Web services, Resourcing bundling: Combinatorial auctions for cloud resources, Scheduling algorithms for computing clouds, Fair queuing, Start-time fair queuing, Borrowed virtual time, Cloud scheduling subject to deadlines, Scheduling MapReduce applications subject to deadlines, Resource management and dynamic scaling, Exercises and problems.

## Module 5

**Teaching Hours:** 10

How to launch an EC2 Linux instance and connect to it, How to use S3 in java, Cloud-based simulation of a distributed trust algorithm, A trust management service, A cloud service for adaptive data streaming, Cloud based optimal FPGA synthesis. Exercises and problems.

**Course Outcomes**

The students should be able to:

- Compare the strengths and limitations of cloud computing
- Identify the architecture, infrastructure and delivery models of cloud computing
- Apply suitable virtualization concept.
- Choose the appropriate cloud player
- Address the core issues of cloud computing such as security, privacy and interoperability
- Design Cloud Services
- Set a private cloud

**Question paper pattern:**

The question paper will have ten questions. There will be 2 questions from each module. Each question will have questions covering all the topics under a module. The students will have to answer 5 full questions, selecting one full question from each module.

**Text Books:**


**Reference Books:**


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**MOBILE APPLICATION DEVELOPMENT**

[As per Choice Based Credit System (CBCS) scheme]

(Effective from the academic year 2016-2017)

**SEMESTER – II**

<table>
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<tbody>
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<td>03</td>
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<td>Total Number of Lecture Hours</td>
<td></td>
</tr>
<tr>
<td>50</td>
<td></td>
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</table>

**CREDITS – 04**

**Course objectives:** This course will enable students to

- Analyze system requirements for mobile applications.
- Apply of mobile development frameworks.
- Demonstrate mobile application design.
- Demonstrate and implement mobile application.

<table>
<thead>
<tr>
<th>Module -1</th>
<th>Teaching Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction to mobile communication and computing: Introduction to mobile computing, Novel applications, limitations and GSM architecture, Mobile services, System architecture, Radio interface, protocols, Handover and security. Smart phone operating systems and smart phones applications.</td>
<td>10 Hours</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Module -2</th>
<th>Teaching Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fundamentals of Android Development: Introduction to Android., The Android 4.1 Jelly Bean SDK, Understanding the Android Software Stack, Installing the Android SDK, Creating Android Virtual Devices, Creating the First Android Project, Using the Text</td>
<td>10 Hours</td>
</tr>
</tbody>
</table>
### Module - 3

### Module-4

### Module-5
Displaying web pages and maps, communicating with SMS and emails. Creating and using content providers: Creating and consuming services, publishing android applications 10 Hours

### Course outcomes:
The students should be able to:
- Describe the requirements for mobile applications
- Explain the challenges in mobile application design and development
- Develop design for mobile applications for specific requirements
- Implement the design using Android SDK
- Implement the design using Objective C and iOS
- Deploy mobile applications in Android and iPhone marketplace for distribution

### Question paper pattern:
The question paper will have ten questions.
There will be 2 questions from each module.
Each question will have questions covering all the topics under a module.
The students will have to answer 5 full questions, selecting one full question from each module.

### Text Books:
1. Mobile Computing: (technologies and Applications-N. N. Jani S chand
2. B.M.Hirwani- Android programming Pearson publications-2013

### DATA MINING & DATA WAREHOUSING
[As per Choice Based Credit System (CBCS) scheme]
(Effective from the academic year 2016 -2017)

#### SEMESTER – II

<table>
<thead>
<tr>
<th>Subject Code</th>
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<th>Exam Marks</th>
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<td>20</td>
<td>80</td>
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</table>

**CREDITS – 04**

### Course objectives:
This course will enable students to
- Define Data warehousing Architecture and Implementation
- Explain Data mining principles and techniques and Introduce DM as a cutting edge business intelligence
- Interpret association rule mining for handling large data
- Classification for the retrieval purposes
- Explain clustering techniques in details for better organization and retrieval of data

<table>
<thead>
<tr>
<th>Module -1</th>
<th>Teaching Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction and Data Preprocessing: Why data mining, What is data mining, What kinds of data can be mined, What kinds of patterns can be mined, Which Technologies Are used, Which kinds of Applications are targeted, Major issues in data mining, Data Preprocessing: An overview, Data cleaning, Data integration, Data reduction, Data transformation and data discretization.</td>
<td>10 Hours</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Module -2</th>
<th>10 Hours</th>
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</thead>
<tbody>
<tr>
<td>Data warehousing and online analytical processing: Data warehousing: Basic concepts, Data warehouse modeling: Data cube and OLAP, Data warehouse design and usage, Data warehouse implementation, Data generalization by attribute-oriented induction.</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Module – 3</th>
<th>10 Hours</th>
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</thead>
<tbody>
<tr>
<td>Classification: Basic Concepts: Basic Concepts, Decision tree induction, Bays Classification Methods, Rule-Based classification, Model evaluation and selection, Techniques to improve classification accuracy.</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Module-4</th>
<th>10 Hours</th>
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</thead>
<tbody>
<tr>
<td>Cluster Analysis: Basic concepts and methods: Cluster Analysis, Partitioning methods, Hierarchical Methods, Density-based methods, Grid-Based Methods, Evaluation of clustering.</td>
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</table>

<table>
<thead>
<tr>
<th>Module-5</th>
<th>10 Hours</th>
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</thead>
<tbody>
<tr>
<td>Data mining trends and research frontiers: Mining complex data types, other methodologies of data mining, Data mining applications, Data Mining and society.</td>
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</table>

<table>
<thead>
<tr>
<th>Course outcomes:</th>
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</thead>
<tbody>
<tr>
<td>The students shall able to:</td>
</tr>
<tr>
<td>- Demonstrate Storing voluminous data for online processing, Preprocess the data for mining applications</td>
</tr>
<tr>
<td>- Apply the association rules for mining the data</td>
</tr>
<tr>
<td>- Design and deploy appropriate classification techniques</td>
</tr>
<tr>
<td>- Cluster the high dimensional data for better organization of the data</td>
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<tr>
<td>- Discover the knowledge imbibed in the high dimensional system</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Question paper pattern:</th>
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<tbody>
<tr>
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</table>

<table>
<thead>
<tr>
<th>Text Books:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Jiawei Han, Micheline Kamber, Jian Pei: Data Mining Concepts and Techniques, ELSEVIER(MK) 3rd edition 2012.</td>
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| Reference Books: | NIL |

<table>
<thead>
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<th>INTERNET OF THINGS</th>
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<tr>
<td>[As per Choice Based Credit System (CBCS) scheme]</td>
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<tr>
<td>(Effective from the academic year 2016 -2017)</td>
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<tr>
<td>SEMESTER – II</td>
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<table>
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| Number of Lecture Hours/Week | 03 | |

| Number of Lecture Hours/Week | 03 | |

| Number of Lecture Hours/Week | 03 | |

| Number of Lecture Hours/Week | 03 | |

| Number of Lecture Hours/Week | 03 | |

<p>| Number of Lecture Hours/Week | 03 | |</p>
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<th>Total Number of Lecture Hours</th>
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<th>Exam Hours</th>
<th>03</th>
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</thead>
</table>

**CREDITS – 03**

**Course objectives:** This course will enable students to
- Define and explain basic issues, policy and challenges in the IoT
- Illustrate Mechanism and Key Technologies in IoT
- Explain the Standard of the IoT
- Explain resources in the IoT and deploy of resources into business
- Demonstrate data analytics for IoT

**Module -1**

<table>
<thead>
<tr>
<th>Teaching Hours</th>
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<tbody>
<tr>
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**Module -2**

<table>
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<tr>
<th>Teaching Hours</th>
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**Module – 3**

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**Module-4**

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**Module-5**

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<tr>
<th>Teaching Hours</th>
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<tr>
<td>8 Hours</td>
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</table>

**Course outcomes:**
At the end of this course the students will be able to:
- Develop schemes for the applications of IOT in real time scenarios
- Manage the Internet resources
- Model the Internet of things to business
- Understand the practical knowledge through different case studies
- Understand data sets received through IoT devices and tools used for analysis

**Question paper pattern:**
The question paper will have ten questions.
There will be 2 questions from each module.
Each question will have questions covering all the topics under a module.
The students will have to answer 5 full questions, selecting one full question from each module.

**Text Books:**

**Reference Books:**

### SOCIAL NETWORK ANALYSIS

*As per Choice Based Credit System (CBCS) scheme*

*(Effective from the academic year 2016-2017)*

**SEMESTER – II**

<table>
<thead>
<tr>
<th>Subject Code</th>
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**Credits – 03**

**Course Objectives:**

- The learning objective of the course Social Network Analysis is to discuss essential knowledge of network analysis applicable to real world data, with examples from today’s most popular social networks.

**Module 1**

*Introduction to social network analysis and Descriptive network analysis:*


**Module 2**

*Network structure, Node centralities and ranking on network:*

- Nodes and edges, network diameter and average path length. Node centrality metrics: degree, closeness and betweenness centrality. Eigenvector centrality and PageRank. Algorithm HITS.

**Module 3**

*Network communities and Affiliation networks:*


**Module 4**

*Information and influence propagation on networks and Network visualization:*

- Social Diffusion. Basic cascade model. Influence maximization. Most influential nodes in network. Network visualization and graph layouts. Graph sampling. Low-dimensional projections

**Module 5**

*Social media mining and SNA in real world: FB/VK and Twitter analysis:*

- Natural language processing and sentiment mining. Properties of large social networks: friends, connections, likes, retweets.

**Course Outcomes**

- The students should be able to:
  - Define notation and terminology used in network science.
  - Demonstrate, summarize and compare networks.
  - Explain basic principles behind network analysis algorithms.
  - Analyzing real world network.

**Question paper pattern:**

The question paper will have ten questions.
There will be 2 questions from each module. Each question will have questions covering all the topics under a module. The students will have to answer 5 full questions, selecting one full question from each module.

**Text Books:**

**Reference Books:**
1. NIL

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**CYBER SECURITY AND CYBER LAW**

[As per Choice Based Credit System (CBCS) scheme]
(Effective from the academic year 2016 -2017)

**SEMESTER –II**

<table>
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</table>

**CREDITS – 03**

**Course objectives:** This course will enable students to
- Define the area of cybercrime and forensics.
- Explain the motive and causes for cybercrime, detection and handling.
- Investigate Areas affected by cybercrime.
- Illustrate tools used in cyber forensic
- Infer legal Perspectives in cyber security

**Module -1**


<table>
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<tr>
<th>Teaching Hours</th>
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**Module -2**


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<th>Teaching Hours</th>
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<td>8 Hours</td>
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</table>

**Module – 3**

Tools and Methods Used in Cybercrime: Introduction, Proxy Servers and Anonymizers, Phishing, Password Cracking, Keyloggers and Spywares, Virus and Worms, Trojan

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<thead>
<tr>
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<tr>
<td>8 Hours</td>
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</table>
Module-4

Module-5

Course outcomes:
By the end of this course the student acquire
- Define cyber security, cyber law and their roles
- Demonstrate cyber security cybercrime and forensics.
- Infer legal issues in cybercrime,
- Demonstrate tools and methods used in cybercrime and security.
- Illustrate evidence collection and legal challenges

Question paper pattern:
The question paper will have ten questions.
There will be 2 questions from each module.
Each question will have questions covering all the topics under a module.
The students will have to answer 5 full questions, selecting one full question from each module.

Text Books:

Reference Books:
<table>
<thead>
<tr>
<th>Number of Lecture Hours/Week</th>
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<td>40</td>
<td>Exam Hours</td>
<td>03</td>
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</tbody>
</table>

**CREDITS – 03**

**Course objectives:** This course will enable students to
- Explain domain of bioinformatics
- Illustrate role of data warehousing and data mining for bioinformatics
- Compare model bioinformatics based applications
- Demonstrate how to deploy the pattern matching and visualization techniques in bioinformatics
- Define the Microarray technologies for genome expression

<table>
<thead>
<tr>
<th>Module</th>
<th>Teaching Hours</th>
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</thead>
<tbody>
<tr>
<td>INTRODUCTION : Need for Bioinformatics technologies – Overview of Bioinformatics technologies – Structural bioinformatics – Data format and processing – secondary resources- Applications – Role of Structural bioinformatics - Biological Data Integration System.</td>
<td>8 Hours</td>
</tr>
<tr>
<td>DATAMINING AND DATAMINING IN BIOINFORMATICS: Bioinformatics data – Data ware housing architecture – data quality – Biomedical data analysis – DNA data analysis – Protein data analysis – Machine learning – Neural network architecture- Applications in bioinformatics.</td>
<td>8 Hours</td>
</tr>
<tr>
<td>MODELING FOR BIOINFORMATICS : Hidden markov modeling for biological data analysis Sequence identification – Sequence classification – multiple alignment generation – Comparative modeling – Protein modeling – genomic modeling – Probabilistic modeling – Bayesian networks – Boolean networks - Molecular modeling – Computer programs for molecular modeling.</td>
<td>8 Hours</td>
</tr>
<tr>
<td>MICROARRAY ANALYSIS: Microarray technology for genome expression study – image analysis for data extraction – preprocessing – segmentation – gridding, spot extraction, normalization, filtering – cluster analysis – gene network analysis</td>
<td>8 Hours</td>
</tr>
</tbody>
</table>

**Course outcomes:**
The students should be able to:
- Deploy the data warehousing and data mining techniques in Bioinformatics
- Model bioinformatics based applications
- Deploy the pattern matching and visualization techniques in bioinformatics
- Work on the protein sequences
- Use the Microarray technologies for genome expression.

**Question paper pattern:**
The question paper will have ten questions.
There will be 2 questions from each module.
Each question will have questions covering all the topics under a module.
The students will have to answer 5 full questions, selecting one full question from each module.

**Text Books:**

**Reference books:** NIL
MINIPROJECT
[As per Choice Based Credit System (CBCS) scheme]
(Effective from the academic year 2016 -2017)

SEMESTER – II

<table>
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<th>Laboratory Code</th>
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<th>IA Marks</th>
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<tbody>
<tr>
<td>Number of Lecture Hours/Week</td>
<td>03 hours of lab</td>
<td>Exam Marks</td>
<td>80</td>
</tr>
<tr>
<td>Total Number of Lecture Hours</td>
<td>------</td>
<td>Exam Hours</td>
<td>03</td>
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</tbody>
</table>

CREDITS – 02

Course objectives: This course will enable students to
- Enable the student to design, develop and analyze an application development

The student will carry out a mini project relevant to the course. The project must be development of an application (Hardware/Software). It is preferable if the project is based on mobile application development.

Course outcomes:
- Design, develop and to analyze an application development.
- Prepare report of the project.

Conduction of Practical Examination:

The student shall prepare the report by including:
1. Define project (Problem Definition)
2. Prepare requirements document
   a. Statement of work
   b. Functional requirements
   c. Software / Hardware requirements
3. Develop use cases
4. Research, analyze and evaluate existing learning materials on the application
5. Develop user interface and implement code
6. Prepare for final demo

Evaluation:

Evaluation shall be taken up at the end of the semester. Project work evaluation and viva-voce examination shall be conducted. Internal evaluation shall be carried by the Guide and Head of the department for 20 marks. Final examination which includes demonstration of the project and viva-voce shall be conducted for 80 Marks viz report + Outputs of the project + presentation = 30+30+20 = 80 marks.

SEMINAR
[As per Choice Based Credit System (CBCS) scheme]
(Effective from the academic year 2016 -2017)

SEMESTER – II

| Subject Code | 16SCE27 / 16SCN27 / 16LNI27 / 16SIT27 / 16SSE27 / 16SCS27 / 16SIT27 / 16SSE27 | IA Marks | 100 |
Course objectives: This course will enable students to
- Motivate the students to read technical article
- Discover recent technology developments

Descriptions
The students should read a recent technical article (try to narrow down the topic as much as possible) from any of the leading reputed and refereed journals like:
  1. IEEE Transactions, journals, magazines, etc.
  2. ACM Transactions, journals, magazines, SIG series, etc.
  3. Springer
  4. Elsevier publications etc
In the area of (to name few and not limited to)
- Web Technology
- Cloud Computing
- Artificial Intelligent
- Networking
- Security
- Data mining

Course Outcomes
The students should be able to:
- Conduct survey on recent technologies
- Infer and interpret the information from the survey conducted
- Motivated towards research

Conduction:
The students have to present at least ONE technical seminar on the selected topic and submit a report for internal evaluation.


MANAGING BIG DATA
[As per Choice Based Credit System (CBCS) scheme]
(Effective from the academic year 2016 -2017)

SEMESTER - IV

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>IA Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>16LNI422 / 16SCE21 / 16SCN24 / 16SCS21 / 16SIT41 / 16SSE422</td>
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<table>
<thead>
<tr>
<th>Number of Lecture Hours/Week</th>
<th>Exam Marks</th>
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<tbody>
<tr>
<td>04</td>
<td>80</td>
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<table>
<thead>
<tr>
<th>Total Number of Lecture Hours</th>
<th>Exam Hours</th>
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</thead>
<tbody>
<tr>
<td>50</td>
<td>03</td>
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</tbody>
</table>

CREDITS – 04

Course objectives: This course will enable students to
- Define big data for business intelligence
- Analyze business case studies for big data analytics
- Explain managing of Big data Without SQL
- Develop map-reduce analytics using Hadoop and related tools

Module -1

UNDERSTANDING BIG DATA: What is big data – why big data – Data!, Data Storage and Analysis, Comparison with Other Systems, Rational Database Management System , 10 Hours

| --- | --- | --- |


| Module-4 | MAPREDUCE APPLICATIONS: MapReduce workflows – unit tests with MRUnit – test data and local tests – anatomy of MapReduce job run – classic Map-reduce – YARN – failures in classic Map-reduce and YARN – job scheduling – shuffle and sort – task execution – MapReduce types – input formats – output formats | 10 Hours |


**Course outcomes:**
The students shall able to:
- Describe big data and use cases from selected business domains
- Explain NoSQL big data management
- Install, configure, and run Hadoop and HDFS
- Perform map-reduce analytics using Hadoop
- Use Hadoop related tools such as HBase, Cassandra, Pig, and Hive for big data Analytics

**Question paper pattern:**
The question paper will have ten questions.
There will be 2 questions from each module.
Each question will have questions covering all the topics under a module.
The students will have to answer 5 full questions, selecting one full question from each module.

**Text Books:**

**Reference Books:**
# BUSINESS INTELLIGENCE AND ITS APPLICATIONS

As per Choice Based Credit System (CBCS) scheme
(Effective from the academic year 2016 -2017)

## SEMESTER – IV

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>IA Marks</th>
<th>Exam Marks</th>
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<th>Exam Hours</th>
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<tbody>
<tr>
<td>16SIT421 / 16SCS422</td>
<td>20</td>
<td>80</td>
<td>40</td>
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</tr>
</tbody>
</table>

| CREDITS – 03 |

## Course objectives:
This course will enable students to
- Evaluate the key elements of a successful business intelligence (BI) program
- Apply a BI meta model that turns outcomes into actions
- Extract and transform data from an operational data to a data business data
- Evaluate business analytics and performance measurement tools

<table>
<thead>
<tr>
<th>Module -1</th>
<th>Teaching Hours</th>
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</table>

<table>
<thead>
<tr>
<th>Module -2</th>
<th>Teaching Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Managing The BI Project, Defining And Planning The BI Project, Project Planning Activities, Roles And Risks Involved In These Activities, General Business Requirement, Project Specific Requirements, Interviewing Process</td>
<td>8 Hours</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Module – 3</th>
<th>Teaching Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Differences in Database Design Philosophies, Logical Database Design, Physical Database Design, Activities, Roles And Risks Involved In These Activities, Incremental Rollout, Security Management, Database Backup And Recovery</td>
<td>8 Hours</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Module-4</th>
<th>Teaching Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Growth Management, Application Release Concept, Post Implementation Reviews, Release Evaluation Activities, The Information Asset and Data Valuation, Actionable Knowledge – ROI, BI Applications, The Intelligence Dashboard</td>
<td>8 Hours</td>
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</table>

<table>
<thead>
<tr>
<th>Module-5</th>
<th>Teaching Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business View of Information technology Applications: Business Enterprise excellence, Key purpose of using IT, Type of digital data, basics of enterprise reporting, BI road ahead.</td>
<td>8 Hours</td>
</tr>
</tbody>
</table>

## Course outcomes:
Upon completion of the course, the students will be able to
- Explain the complete life cycle of BI/Analytical development
- Illustrate technology and processes associated with Business Intelligence framework
- Demonstrate a business scenario, identify the metrics, indicators and make recommendations to achieve the business goal.

## Question paper pattern:
The question paper will have ten questions.
There will be 2 questions from each module.
Each question will have questions covering all the topics under a module.
The students will have to answer 5 full questions, selecting one full question from each module.
### Text Books:

### Reference Books:

### ADVANCES IN COMPUTER GRAPHICS

[As per Choice Based Credit System (CBCS) scheme]
(Effective from the academic year 2016 -2017)

**SEMESTER – IV**

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<tbody>
<tr>
<td>16SCS154 /16SIT422</td>
<td>03</td>
<td>80</td>
<td>40</td>
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</table>

**CREDITS – 03**

**Course objectives:** This course will enable students to
- Explain basic and fundamental computer graphics techniques.
- Compare and contrast image synthesis techniques.
- Examine applications of modeling, design and visualization.
- Discuss different color modeling and computer animation.
- Explain hierarchical modeling and graphing file formats.

**Module 1**

Three-Dimensional Object Representations: Polyhedra, OpenGL Polyhedron Functions, Curved Surfaces, Quadric Surfaces, Super quadrics, OpenGL Quadric-Surface and Cubic-Surface Functions, Blobby Objects, Spline Representations, Cubic-Spline Interpolation Methods, Bezier Spline Curves, Bzier Surfaces B-Spline Curves, B-Spline Surfaces, Beta- Splines, Retional Splines, Conversion Between Spline Representations, Displaying Spline Curves and rfaces, OpenGL Approximation-Spline Functions, Sweep Representations, Constructive Solid –Geometry Method, Octrees, BSP T rees, Fractal-Geometry Methods, Shape Grammars and Others Procedural Methods, Particle Systems, Physically Based Modeling, Visualization Of Data Sets.

**Module 2**


**Module 3**

Illumination Models and Surface- Rendering Methods: Light Sources, Surface Lighting Effects, Basic Illumination Models, Transparent Surfaces, Atmospheric Effects, Shadows, Camera parameters, Displaying light intensities, Halftone patterns anddithering techniques, polygon rendering methods, ray-tracing methods, Radiosity lighting model, Environment mapping, Photon mapping, Adding surface details, Modeling surface details with polygons, Texture mapping, Bump mapping, OpenGL

**Teaching Hours**

- **Module 1:** 8 Hours
- **Module 2:** 8 Hours
- **Module 3:** 8 Hours
### Module 4


**8 Hours**

### Module 5

Hierarchical modeling and Graphics file formats: Basic modeling concepts, Modeling packages, General hierarchical modeling methods, Hierarchical modeling using openGL display list, Image-File configurations, Color-reduction methods, File-compression techniques, Composition of the major file formats.

**8 Hours**

### Course Outcomes

The students should be able to:

- Discuss and implement images and objects using 3D representation and openGL methodologies.
- Design and develop surface detection using various detection methods.
- Choose various illumination models for provides effective standards of objects.
- Design of develop effective computer animations.

### Question paper pattern:

The question paper will have ten questions. There will be 2 questions from each module. Each question will have questions covering all the topics under a module. The students will have to answer 5 full questions, selecting one full question from each module.

### Text Books:


### Reference Books:

- Analyze the performances of web applications

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<tr>
<th>Module -1</th>
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| Module -2                                                                                       | 8 Hours        |

| Module – 3                                                                                       | 8 Hours        |
| Testing Web Applications: Introduction, Fundamentals, Testing specifics in web engineering, Test approaches, Test scheme, Test methods and techniques, Test automation, Outlook. Operation and Maintenance of Web Applications: Introduction, Challenges following the launch of a web application, Content management, Usage analysis, Outlook. Web Project Management: From software project management to web project management, Challenges in web project management, Managing web teams, Managing the development process of a web application, Outlook. | 8 Hours        |

| Module-4                                                                                       | 8 Hours        |

| Module-5                                                                                       | 8 Hours        |

Course outcomes:

- Ability to Model the requirements of a web application.
- Contrast technology-aware Web Application.
- Ability to analyze the performances of web applications

Question paper pattern:

The question paper will have ten questions.
There will be 2 questions from each module.
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Text Books:

Reference Books:

MACHINE LEARNING TECHNIQUES
[As per Choice Based Credit System (CBCS) scheme]
(Effective from the academic year 2016-2017)
SEMESTER - IV

Subject Code | IA Marks | Exam Marks | Total Number of Lecture Hours | Exam Hours
--- | --- | --- | --- | ---
16SCS41/16SIT424 | 20 | 80 | 40 | 03

CREDITS – 03

Course objectives: This course will enable students to
- Explain basic concepts of learning and decision trees.
- Compare and contrast neural networks and genetic algorithms
- Apply the Bayesian techniques and instant based learning
- Examine analytical learning and reinforced learning

Module -1
INTRODUCTION, CONCEPT LEARNING AND DECISION TREES
Teaching Hours: 8 Hours

Module -2
NEURAL NETWORKS AND GENETIC ALGORITHMS:
Teaching Hours: 8 Hours

Module -3
BAYESIAN AND COMPUTATIONAL LEARNING
Teaching Hours: 8 Hours

Module-4
INSTANT BASED LEARNING AND LEARNING SET OF RULES:
Teaching Hours: 8 Hours

Module-5
ANALYTICAL LEARNING AND REINFORCED LEARNING:
Teaching Hours: 8 Hours

Course outcomes:
On Completion of the course, the students will be able to
- Choose the learning techniques with this basic knowledge.
- Apply effectively neural networks and genetic algorithms for appropriate applications.
- Apply bayesian techniques and derive effectively learning rules.
- Choose and differentiate reinforcement and analytical learning techniques

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