INTERNET OF THINGS TECHNOLOGY
[As per Choice Based Credit System (CBCS) scheme]
(Effective from the academic year 2016 -2017)
SEMESTER – VIII

Subject Code: 15CS81
IA Marks: 20
Number of Lecture Hours/Week: 04
Exam Marks: 80
Total Number of Lecture Hours: 50
Exam Hours: 03
CREDITS – 04

Course Objectives:
This course will enable students to

- Assess the genesis and impact of IoT applications, architectures in real world.
- Illustrate diverse methods of deploying smart objects and connect them to network.
- Compare different Application protocols for IoT.
- Infer the role of Data Analytics and Security in IoT.
- Identify sensor technologies for sensing real world entities and understand the role of IoT in various domains of Industry.

Module – 1


10 Hours

Module – 2


10 Hours

Module – 3


10 Hours

Module – 4


10 Hours

Module – 5


10 Hours
**Course Outcomes:** After studying this course, students will be able to

- Interpret the impact and challenges posed by IoT networks leading to new architectural models.
- Compare and contrast the deployment of smart objects and the technologies to connect them to network.
- Appraise the role of IoT protocols for efficient network communication.
- Elaborate the need for Data Analytics and Security in IoT.
- Illustrate different sensor technologies for sensing real world entities and identify the applications of IoT in Industry.

**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:**

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

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>IA Marks</th>
<th>Exam Marks</th>
<th>Exam Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>15CS82</td>
<td>20</td>
<td>80</td>
<td>03</td>
</tr>
</tbody>
</table>

**CREDITS – 04**

### Course objectives:
This course will enable students to
- Understand Hadoop Distributed File system and examine MapReduce Programming
- Explore Hadoop tools and manage Hadoop with Ambari
- Appraise the role of Business intelligence and its applications across industries
- Assess core data mining techniques for data analytics
- Identify various Text Mining techniques

### Module – 1
Hadoop Distributed File System Basics, Running Example Programs and Benchmarks, Hadoop MapReduce Framework, MapReduce Programming

### Module – 2
Essential Hadoop Tools, Hadoop YARN Applications, Managing Hadoop with Apache Ambari, Basic Hadoop Administration Procedures

### Module – 3
Business Intelligence Concepts and Application, Data Warehousing, Data Mining, Data Visualization

### Module – 4
Decision Trees, Regression, Artificial Neural Networks, Cluster Analysis, Association Rule Mining

### Module – 5
Text Mining, Naïve-Bayes Analysis, Support Vector Machines, Web Mining, Social Network Analysis

### Course outcomes:
The students should be able to:
- Master the concepts of HDFS and MapReduce framework
- Investigate Hadoop related tools for Big Data Analytics and perform basic Hadoop Administration
- Recognize the role of Business Intelligence, Data warehousing and Visualization in decision making
- Infer the importance of core data mining techniques for data analytics
- Compare and contrast different Text Mining Techniques

### 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:

<table>
<thead>
<tr>
<th>Reference Books:</th>
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</thead>
</table>
# HIGH PERFORMANCE COMPUTING

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

**SEMESTER – VIII**

<table>
<thead>
<tr>
<th>Subject Code</th>
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<td>15CS831</td>
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</table>

Number of Lecture Hours/Week: 3
Total Number of Lecture Hours: 40

**Credits – 03**

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

- Introduce students the design, analysis, and implementation, of high performance computational science and engineering applications.
- Illustrate on advanced computer architectures, parallel algorithms, parallel languages, and performance-oriented computing.

### Module – 1

**Introduction: Computational Science and Engineering:**
Computational Science and Engineering Applications; characteristics and requirements, Review of Computational Complexity, Performance: metrics and measurements,粒度和 Partitioning, Locality: temporal/spatial/stream/kernel, Basic methods for parallel programming, Real-world case studies (drawn from multi-scale, multi-discipline applications)

### Module – 2

**High-End Computer Systems:**

### Module – 3

**Parallel Algorithms:**

### Module – 4

**Parallel Programming:**
Revealing concurrency in applications, Task and Functional Parallelism, Task Scheduling, Synchronization Methods, Parallel Primitives (collective operations), SPMD Programming (threads, OpenMP, MPI), I/O and File Systems, Parallel Matlabs (Parallel Matlab, Star-P, Matlab MPI), Partitioning Global Address Space (PGAS) languages (UPC, Titanium, Global Arrays)

### Module – 5

**Achieving Performance:**
Measuring performance, Identifying performance bottlenecks, Restructuring applications for deep memory hierarchies, Partitioning applications for heterogeneous resources, using existing libraries, tools, and frameworks

**Course Outcomes:** The students should be able to:

- Illustrate the key factors affecting performance of CSE applications, and
- Make mapping of applications to high-performance computing systems, and
- Apply hardware/software co-design for achieving performance on real-world applications

**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:**
## USER INTERFACE DESIGN

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

**SEMESTER – VIII**

<table>
<thead>
<tr>
<th>Subject Code</th>
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<tr>
<td>15CS832</td>
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<table>
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<tr>
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<th>Exam Marks</th>
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<td>80</td>
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<tr>
<th>Total Number of Lecture Hours</th>
<th>Exam Hours</th>
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<tr>
<td>40</td>
<td>03</td>
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**CREDITS – 03**

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

- To study the concept of menus, windows, interfaces
- To study about business functions
- To study the characteristics and components of windows and the various controls for the windows.
- To study about various problems in windows design with color, text, graphics.
- To study the testing methods

### Module – 1

Introduction-Importance-Human-Computer interface-characteristics of graphics interface-Direct manipulation graphical system - web user interface-popularity-characteristic & principles.

**Teaching Hours**

<table>
<thead>
<tr>
<th>Module – 2</th>
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</table>

**10 Hours**

### Module – 3


### Module – 4


### Module – 5


### Course outcomes:
The students should be able to:

- Design the user interface, design, menu creation and windows creation and connection between menu and windows

### 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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# NETWORK MANAGEMENT

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

**SEMESTER – VIII**

<table>
<thead>
<tr>
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<th>Number of Lecture Hours/Week</th>
<th>Exam Marks</th>
<th>Total Number of Lecture Hours</th>
<th>Exam Hours</th>
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<tbody>
<tr>
<td>15CS833</td>
<td>20</td>
<td>3</td>
<td>80</td>
<td>40</td>
<td>3</td>
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</table>

**CREDITS – 03**

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

- To understand the need for interoperable network management.
- To learn to the concepts and architecture behind standards based network management.
- To understand the concepts and terminology associated with SNMP and TMN
- To understand network management as a typical distributed application

<table>
<thead>
<tr>
<th>Module – 1</th>
<th>Teaching Hours</th>
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</thead>
<tbody>
<tr>
<td><strong>Introduction:</strong> Analogy of Telephone Network Management, Data and Telecommunication Network Distributed computing Environments, TCP/IP-Based Networks: The Internet and Intranets, Communications Protocols and Standards- Communication Architectures, Protocol Layers and Services; Case Histories of Networking and Management – The Importance of topology, Filtering Does Not Reduce Load on Node, Some Common Network Problems; Challenges of Information Technology Managers, Network Management: Goals, Organization, and Functions- Goal of Network Management, Network Provisioning, Network Operations and the NOC, Network Installation and Maintenance; Network and System Management, Network Management System platform, Current Status and Future of Network Management.</td>
<td><strong>8 Hours</strong></td>
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</tbody>
</table>

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<thead>
<tr>
<th>Module – 2</th>
<th>Teaching Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Foundations: Standards, Models, and Language: Network Management Standards, Network Management Model, Organization Model, Information Model – Management Information Trees, Managed Object Perspectives, Communication Model; ASN.1- Terminology, Symbols, and Conventions, Objects and Data Types, Object Names, An Example of ASN.1 from ISO 8824; Encoding Structure; Macros, Functional Model.</td>
<td><strong>8 Hours</strong></td>
</tr>
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</table>

<table>
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<tr>
<th>Module – 3</th>
<th>Teaching Hours</th>
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<table>
<thead>
<tr>
<th>Module – 4</th>
<th>Teaching Hours</th>
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<tbody>
<tr>
<td>Broadband Access Networks, Broadband Access Technology; HFCT</td>
<td><strong>8 Hours</strong></td>
</tr>
</tbody>
</table>
**Module – 5**


**Course outcomes:** The students should be able to:

- Analyze the issues and challenges pertaining to management of emerging network technologies such as wired/wireless networks and high-speed internets.
- Apply network management standards to manage practical networks
- Formulate possible approaches for managing OSI network model.
- Use on SNMP for managing the network
- Use RMON for monitoring the behavior of the network
- Identify the various components of network and formulate the scheme for the managing them

**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:**
**SYSTEM MODELLING AND SIMULATION**  
[As per Choice Based Credit System (CBCS) scheme]  
(Effective from the academic year 2016 -2017)  
**SEMESTER – VIII**

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>15CS834</td>
<td>20</td>
<td>80</td>
<td>40</td>
<td>03</td>
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</tbody>
</table>

**CREDITS – 03**

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

- Explain the basic system concept and definitions of system;
- Discuss techniques to model and to simulate various systems;
- Analyze a system and to make use of the information to improve the performance.

### Module – 1

<table>
<thead>
<tr>
<th>Introduction:</th>
<th>When simulation is the appropriate tool and when it is not appropriate, Advantages and disadvantages of Simulation; Areas of application, Systems and system environment; Components of a system; Discrete and continuous systems, Model of a system; Types of Models, Discrete-Event System Simulation Simulation examples: Simulation of queuing systems.</th>
<th>General Principles, Simulation Software: Concepts in Discrete-Event Simulation. The Event-Scheduling / Time-Advance Algorithm, Manual simulation Using Event Scheduling</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Teaching Hours</strong></td>
<td>10 Hours</td>
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### Module – 2

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<td><strong>Teaching Hours</strong></td>
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### Module – 3

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<tbody>
<tr>
<td><strong>Teaching Hours</strong></td>
<td>10 Hours</td>
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### Module – 4

| Input Modeling: Data Collection; Identifying the distribution with data, Parameter estimation, Goodness of Fit Tests, Fitting a non-stationary Poisson process, Selecting input models without data, Multivariate and Time-Series input models. Estimation of Absolute Performance: Types of simulations with respect to output analysis, Stochastic nature of output data, Measures of performance and their estimation, Contd.. |
|----------------------------------|------------------------------------------------------------------------------------------------|
| **Teaching Hours**               | 10 Hours                                                                                      |

### Module – 5

| Measures of performance and their estimation, Output analysis for terminating simulations Continued, Output analysis for steady-state simulations. Verification, Calibration And Validation: Optimization: Model building, verification and validation, Verification of simulation models, Verification of |
|----------------------------------|------------------------------------------------------------------------------------------------|
| **Teaching Hours**               | 10 Hours                                                                                      |
## Course outcomes:
The students should be able to:

- Explain the system concept and apply functional modeling method to model the activities of a static system.
- Describe the behavior of a dynamic system and create an analogous model for a dynamic system.
- Simulate the operation of a dynamic system and make improvement according to the simulation results.

## 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:
**INTERNERNSHIP / PROFESSIONAL PRACTISE**  
[As per Choice Based Credit System (CBCS) scheme]  
(Effective from the academic year 2016 -2017)  
**SEMESTER – VIII**

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<tr>
<td>15CS84</td>
<td>50</td>
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</table>

**CREDITS – 02**

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

**Description (If any):**

**Course outcomes:** The students should be able to:

**Evaluation of Internship :**
## PROJECT WORK PHASE II
[As per Choice Based Credit System (CBCS) scheme]
(Effective from the academic year 2016 -2017)

**SEMESTER – VIII**

<table>
<thead>
<tr>
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<th>Exam Marks</th>
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<tbody>
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</table>

**Number of Lecture Hours/Week**
- 06

**Total Number of Lecture Hours**
- Exam Hours: 03

**CREDITS – 05**

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

### Description (If any):

### Course outcomes:
The students should be able to:

### Conduction of Practical Examination:
<table>
<thead>
<tr>
<th>Subject Code</th>
<th>IA Marks</th>
<th>Total Number of Lecture Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>15CSS86</td>
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<tr>
<td>Number of Lecture Hours/Week</td>
<td>04</td>
<td>Exam Marks --</td>
</tr>
<tr>
<td>Total Number of Lecture Hours</td>
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<td>Exam Hours --</td>
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</tbody>
</table>

**CREDITS – 02**

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

- 

**Description:**

- 

**Course outcomes:** The students should be able to:

- 

**Evaluation of seminar:**