MASTER OF COMPUTER APPLICATIONS

CURRICULUM AND SYLLABUS

(For students admitted from the Academic year 2022-2023)

UNDER CHOICE BASED CREDIT SYSTEM

[Regulations 2022]

DIRECTORATE OF DISTANCE EDUCATION
SRM INSTITUTE OF SCIENCE AND TECHNOLOGY
SRM NAGAR, KATTANKULATHUR – 603 203

DIRECTORATE OF DISTANCE EDUCATION

MASTER OF COMPUTER APPLICATIONS
(For students admitted from the academic year 2022-2023)

CURRICULUM

SEMESTER - III

Category	Course Code	Course Title	L	T	P	Total LTP	C
Compulsory Core 1	MCAD2231	Object Oriented Analysis and Design With UML	3	1	4	8	6
	MCAD2232	Big Data and its Applications	3	1	0	4	4
Student Must Select any one of the following Core Courses							
Choice Based Core	MCAD 2233	Open-Source Technologies	3	1	4	8	6
	MCAD2234	Artificial Intelligence and Machine Learning					
Compulsory Core2	MCAD2235	Mini Project	0	0	4	4	2
Student Must Select any one of the following Elective Courses							
Elective 2	MCAD22E3	Cloud Computing	3	1	0	4	4
	MCAD22E4	Internet of Things (IOT)					
		Total	**12**	**4**	**12**	**28**	**22**

SEMESTER – III

Course Code	Course Title	L	T	P	Total LTP	C
MCAD 2231	**OBJECT ORIENTED ANALYSIS AND DESIGN WITH UML**	**3**	**1**	**4**	**8**	**6**

INSTRUCTIONAL OBJECTIVES At the end of this course the learner is expected:		**Student Outcomes**				
1.	To ensure quality and reusability while developing software	c				
2.	To analyze and design the problem domain using unified Object approach	b	d			
3.	To identify and categorize business, access and view layer objects of the application		d			
4.	To derive OOA & OOD phases using UML diagrams and CASE tools		e	l		

UNIT I- OO BASICS

An Overview of OO Systems Development – Introduction, Views, Methodologies, Need, Overview of Unified Approach; Object Basics – Introduction, Philosophy, OO Concepts – Object Relationships, Associations, Aggregations and Object Containment, Advanced Topics and Case Study; OOSD – SD Process, Building HQ S/W, Use Case Driven Approach, Reusability.

UNIT II- METHODOLOGIESM, MODELING AND UML

Methodologies – Introduction, Rumbaugh, Booch and Jacobson Methodologies; Patterns and Frameworks; Unified Approach; UML – Introduction UML Diagrams - Class, Use-Case, Behavior and Implementation Diagrams - Model Management - UML Extensibility and Meta Model.

UNIT III- OOA: IDENTIFYING USE CASES AND CLASSIFICATION

Identifying Use Cases -Introduction, Business Object Analysis, Use Case Driven OOA: Unified Approach, Business Process Modeling – Use-Case Model, Developing Effective Documentation – Case Study; OA: Classification – Introduction, Approaches – Noun Phrase, Common Class Patterns, Use Case Driven, CRC; Naming Classes.

UNIT IV- IDENTIFYING ORAM AND OO DESIGN

Identifying Object Relationships, Attributes and Methods – Introduction, Associations, Super- Sub Class and Part – of Relationships – Case Study. Class and Object Responsibility, Defining Attributes and Methods for ViaNet bank Objects; OOD Process and Axioms - Introduction, Corollaries, Design Patterns; Designing Classes – Introduction, OOD philosophy, OCL, The Process, Class Visibility, Designing Methods for ViaNet Bank Objects, Packages and Managing Classes.

UNIT V - ACCESS LAYER AND VIEW LAYER

Access Layer – Introduction, DBMS, Logical and Physical DB Organization and Access Control, Distributed Databases and Client Server Computing, OODBMS, Object Relational Systems, Multi Database Systems, Designing Access Layer Classes; Case study; View Layer – Introduction, Design view layer classes, Macro and Micro Level Process, Purpose of a View Layer Interface, Prototyping the User Interface, Case Study.

TEXT BOOK

1. Ali Bahrami – Object Oriented System Development – Tata McGraw Hill, 2008.

REFERENCE:

1. Grady Booch, Ivar Jacobson, James Rumbaugh - The Unified Modeling Language User Guide - Pearson Education, 2nd edition, 2005.

<table>
<tr><td colspan="7">Course Nature: Theory-Cum-Practical</td></tr>
<tr><td colspan="7">Assessment Method(Maximum marks)</td></tr>
<tr><td rowspan="4">In Semester</td><td rowspan="3">Assessment Tool</td><td colspan="2">Practical exercises -I</td><td colspan="2">Practical exercises -II</td><td rowspan="3">Total</td></tr>
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<tr><td rowspan="2">End Semester</td><td rowspan="2">Marks</td><td colspan="3">Theory</td><td>Practical</td><td rowspan="2">70</td></tr>
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<tr><td colspan="6" align="right">Total</td><td>100</td></tr>
</table>

Course Code	Course Title	L	T	P	Total LTP	C
MCAD 2232	**BIG DATA AND ITS APPLICATIONS**	**3**	**1**	**0**	**4**	**4**

INSTRUCTIONAL OBJECTIVES At the end of this course the learner is expected:		**Student Outcomes**				
1.	To understand the nature of data & carry out intelligent data analytics	**a**				
2.	To know various modern data analysis tools & trends in data analysis		**e**			
3.	To gain knowledge in Hadoop Distributed File Systems and Applications of Big Data using Pig and Hive services			**l**		

UNIT I - INTRODUCTION TO BIG DATA

Introduction to BigData Platform – Challenges of Conventional Systems - Intelligent data analysis Nature of Data - Analytic Processes and Tools - Analysis vs Reporting - Modern Data Analytic Tools - Statistical Concepts: Sampling Distributions - Re-Sampling - Statistical Inference - Prediction Error.

UNIT II - MINING DATA STREAMS

Introduction To Streams Concepts – Stream Data Model and Architecture – Stream Computing - Sampling Data in a Stream – Filtering Streams – Counting Distinct Elements in a Stream – Estimating Moments – Counting Oneness in a Window – Decaying Window - Real time Analytics Platform(RTAP) Applications - Case Studies - Real Time Sentiment Analysis, Stock Market Predictions.

UNIT III – HADOOP

History of Hadoop- The Hadoop Distributed File System – Components of HadoopAnalyzing the Data with Hadoop- Scaling Out- Hadoop Streaming- Design of HDFSJava interfaces to HDFS- Basics-Developing a Map Reduce Application-How Map Reduce Works-Anatomy of a Map Reduce Job run-Failures-Job Scheduling-Shuffle and Sort – Task execution - Map Reduce Types and Formats- Map Reduce Features

UNIT IV - HADOOP ENVIRONMENT

Setting up a Hadoop Cluster - Cluster specification - Cluster Setup and Installation - Hadoop Configuration-Security in Hadoop - Administering Hadoop – HDFS - Monitoring-Maintenance-Hadoop benchmarks- Hadoop in the cloud

UNIT V – FRAMEWORKS

Applications on Big Data Using Pig and Hive – Data processing operators in Pig –Hive services – HiveQL – Querying Data in Hive - fundamentals of HBase and ZooKeeper –SQOOP

TEXT BOOKS

1. Michael Berthold, David J. Hand, "Intelligent Data Analysis", Springer, 2007 (Unit 1).
2. Tom White " Hadoop: The Definitive Guide" Third Edition, O'reilly Media, 2012 (Units 3, 4 & 5).
3. Anand Rajaraman and Jeffrey David Ullman,"Mining of Massive Datasets",Cambridge Press, 2012(Unit 2).

Course Nature: Theory				
Assessment Method(Maximum marks)				
In Semester	Assessment Tool	Assignment I	Assignment II	Total
	Marks	15	15	30
End Semester				70
Total				100

Course Code	Course Title	L	T	P	Total LTP	C
MCAD2233	**OPEN-SOURCE TECHNOLOGIES**	**3**	**1**	**4**	**8**	**6**

INSTRUCTIONAL OBJECTIVES At the end of this course the learner is expected:		**Student Outcomes**				
1.	To understand the basics and advantages of open source	a				
2.	To learn the open source software Angular JS		b			
3.	To develop the programming skill in Mongo DB		c	e		

UNIT-1 Introduction

Open Source, Need and Principles of OSS, Open-Source Standards, Requirements for Software, OSS success, Free Software, Examples, Licensing, Free Vs. Proprietary Software, Free Software Vs. Open-Source Software, Public Domain. History of free software, Proprietary Vs Open-Source Licensing Model, use of Open- Source Software, FOSS does not mean no cost. History: BSD, The Free Software Foundation and the GNU Project.

Unit-2 Open-Source Eco System

Open-Source Operating Systems: GNU/Linux, Android, Free BSD, Open Solaris. Open-Source Hardware, Virtualization Technologies, Containerization Technologies: Docker, Development tools, IDEs, Debuggers, Programming languages, LAMP, Open-Source Database technologies

Case Studies: Example Projects: Apache Web server, BSD, GNU/Linux, Android, Mozilla (Firefox), Wikipedia, Drupal, WordPress, Git, GCC, GDB, GitHub, Open Office, LibreOffice

Unit 3- Angular JS

Introduction and Agenda - Prerequisites - What are SPA's - Introduction to AngularJS - Features of AngularJS - MVC Architecture - Versions and Transitions - Environmental Setup - Angular JS IDE's - Introduction to Visual studio code - Angular app fundamentals - Simple AngularJS App - Companies using Angular JS - Advantages of Angular JS

Unit 4-Mongo DB

Introduction to Mongodb- Installing Mongo DB in Windows, Linux and Mac Operating Systems - Installing and Working with MongoDB interfaces: i)Mongo Shell, ii)Mongo Compass - MongodbDatatypes: i)Integer ii)Boolean iii)Double iv)String v)Arrays vi)Object vii)Null viii)Regular expression ix)Timestamp x)Date xi)Object ID - Introduction to entities of MongoDB: i)Databases i)Collections and iii)Documents - Database:

i)createDatabase()method with example, ii)dropDatabase() method with example - Collections: i)createCollection() method with example ii)dropCollection() method with example

Unit 5 – Mongo DB

Indexes: Properties of Index, i)Unique Indexes, ii)Partial Indexes, iii)Sparse Indexes, iv)TTL Indexes - Aggregation in Mongodb: i)aggregate() method - Aggregate expressions: i) $sum ii) $avg iii) $min iv) $max v) $push vi) $addToSet vii) $first viii) $last - Mongodb Backup: Export/Import data backup using shell - i)mongodump, ii)mongorestore - Mongodb Backup: Export/Import data backup using Mongo Compass - Monitoring Deployment using Mongodb: i)mongostat, mongotop, iii)serverStatus, dbStats, collStats

TEXTBOOK:

1. James Lee and Brent Ware, "Open-Source Web Development with LAMP using Linux, Apache, MySQL, Perl and PHP".
2. Learning AngularJS, Free eBook created from Stack Overflow contributors.
3. MongoDB: The Definitive Guide, Book by Kristina Chodorow and Michael Dirolf

WEB REFERENCES

www.w3schools.com, www.php.net, www.phpclasses.org www.tizag.com, www.tutorialspoint.com, www.perl.org, www.oracle.com

Course Nature: Theory-Cum-Practical						
Assessment Method(Maximum marks)						
In Semester	Assessment Tool	Practical exercises -I		Practical exercises -II		Total
		Theory	Practical	Theory	Practical	
		10	5	10	5	
	Total	**15**		**15**		**30**
End Semester	Marks	Theory			Practical	**70**
		40			**30**	
					Total	**100**

Course Code	**Course Title**	**L**	**T**	**P**	**Total LTP**	**C**
MCAD2234	**ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING**	**3**	**1**	**4**	**8**	**6**

INSTRUCTIONAL OBJECTIVES At the end of this course the learner is expected:		**Student Outcomes**				
1.	To understand the basics and advantages about Artificial Intelligence(AI) and Heuristic search technique	a				
2.	Understand and Apply real time problem using Artificial Intelligence Understand and Apply Machine Learning in Gaming development		b			
3.	Practice the Machine Learning Models		c	e		

UNIT 1: DEFINITIONS

History of Artificial Intelligence, AI Problems and AI, Techniques, Demonstration of water Jug problem, Production System Characteristics, Game Planning, Heuristic Search Techniques, Sales man problem, Revolutions of AI, Intelligent Agents, Demonstrations of AI real-time examples.

UNIT 2: KNOWLEDGE REPRESENTATIONS

Representation and Mapping, Approaches in Knowledge representations, Explanations of different types of Knowledge, Predicate logic, First order Predicate Logic (FOPL), Representing Knowledge using Rules, Knowledge Acquisition, Ontology, Syntax and semantic of FOL

UNIT 3: LEARNING

Types of Machine Learning, Supervised Learning, Perspectives and Issues in Machine Learning, Concept Learning task, Concept Learning as a search, Reinforcement Learning, Importance of Reinforcement Learning, Design a Learning System, Candidate Elimination Algorithm, Hypothesis space Version space, Mushroom dataset.

UNIT 4: LEARNING WITH TREES

Basic Decision tree algorithm, Hypothesis space search, Decision tree and Inductive Bias ,Decision tree implementation, Unsupervised Learning, Clustering techniques, K- Means algorithm, Implementation of Decision tree and K- Mean algorithm, ID3 algorithm, Entropy calculation, Measure Information gain

UNIT 5: INTRODUCTION ABOUT NEURAL NETWORK

Neural Network representation, Types of Neural Network, Application of Neural Network using ppt, Neural Network model implementation, Perceptronand Multi-layer perceptron, Convergence andlocal minima, Activation functionsandSigmoid functions, Implementation of Multi-layer neural network , Backpropagation algorithm, Feed Forward Neural Network, Genetic algorithm

TEXTBOOK:

1. Rich Elaine & Kevin Knight – Artificial Intelligence – Tata McGraw Hill -1993
2. Machine Learning. Tom Mitchell. First Edition, McGraw- Hill, 1997. (Chapters : 1, 2, 3, 4, 8 and 9)

REFERENCE:

1. Peter Flach, ―Machine Learning: The Art and Science of Algorithms that Make Sense of Data‖, First Edition, Cambridge University Press, 2012.
2. Stephen Marsland, ―Machine Learning –An Algorithmic Perspective, Second Edition, Chapman and Hall/CRC Machine Learning and Pattern Recognition Series, 2014.

<table>
<tr><td colspan="8">Course Nature: Theory-Cum-Practical</td></tr>
<tr><td colspan="8">Assessment Method(Maximum marks)</td></tr>
<tr><td rowspan="4">In Semester</td><td rowspan="3">Assessment Tool</td><td colspan="2">Practical exercises -I</td><td colspan="2">Practical exercises -II</td><td rowspan="3">Total</td></tr>
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<tr><td>Total</td><td colspan="2">15</td><td colspan="2">15</td><td>30</td></tr>
<tr><td rowspan="2">End Semester</td><td rowspan="2">Marks</td><td colspan="3">Theory</td><td>Practical</td><td rowspan="2">70</td></tr>
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<tr><td colspan="6" align="right">Total</td><td>100</td></tr>
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Course Code	Course Title	L	T	P	Total LTP	C
MCAD2235	**MINI PROJECT**	**0**	**0**	**4**	**4**	**2**

Students can choose problems of their own interest to develop software package using the programming languages/tools available. There will be two reviews conducted during the project period for all the students. At the end of the project, every student shall submit a structured project report.

<table>
<tr><td colspan="2">INSTRUCTIONAL OBJECTIVES
At the end of this course the learner is expected:</td><td colspan="5">Student Outcomes</td></tr>
<tr><td>1.</td><td>Acquire practical knowledge within the chosen area of technology for project development</td><td>a</td><td></td><td></td><td></td><td></td></tr>
<tr><td>2.</td><td>Identify, analyze, formulate and handle programming projects with a comprehensive and systematic approach</td><td></td><td>B</td><td></td><td></td><td></td></tr>
<tr><td>3</td><td>Contribute as an individual or in a team in development of technical projects</td><td></td><td>C</td><td></td><td></td><td>k</td></tr>
<tr><td>4</td><td>Develop effective communication skills for presentation of project related activities</td><td></td><td></td><td></td><td></td><td>j</td></tr>
</table>

<table>
<tr><td colspan="6">Course Nature: Practical</td></tr>
<tr><td colspan="6">Assessment Method(Maximum marks)</td></tr>
<tr><td rowspan="2">In Semester</td><td rowspan="3">Assessment Tool</td><td>Practical exercises -I</td><td>Practical exercises -II</td><td>Practical exercises -III</td><td>Total</td></tr>
<tr><td>10</td><td>10</td><td>10</td><td>30</td></tr>
<tr><td>End Semester</td><td colspan="3">Practicals</td><td>70</td></tr>
<tr><td colspan="5" align="right">Total</td><td>100</td></tr>
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Course Code	Course Title	L	T	P	Total LTP	C
MCAD22E3	**CLOUD COMPUTING**	**3**	**1**	**0**	**4**	**4**

<table>
<tr><td colspan="2">INSTRUCTIONAL OBJECTIVES
At the end of this course the learner is expected:</td><td colspan="5">Student Outcomes</td></tr>
<tr><td>1.</td><td>To understand the need of cloud computing in the IT sector</td><td>a</td><td></td><td></td><td></td><td></td></tr>
<tr><td>2.</td><td>To know the cloud service providers and the kind of services offered by them</td><td></td><td>g</td><td></td><td></td><td></td></tr>
<tr><td>3.</td><td>To analyze the benefits of cloud in business continuity by applying cloud services, security and virtualization features</td><td></td><td>b</td><td></td><td></td><td></td></tr>
<tr><td>4.</td><td>To enable the learner for aspiring careers in Cloud / Software Product development areas</td><td></td><td></td><td>l</td><td>k</td><td>J</td></tr>
</table>

UNIT I - CLOUD FUNDAMENTALS

Cloud computing Definition – Cloud Models such as NIST, Cube, Private, Public, Hybrid and Community clouds – Cloud Characteristics – Benefits, Disadvantages, Challenges and obstacles of Cloud Computing – Cloud Cost Measurement, Capital expenditure, Total cost and SLA – Cloud Architecture – Types of Cloud Services (IaaS, PaaS, SaaS, IdaaS).

UNIT II - CLOUD PLATFORMS

Abstraction – Load balancing and virtualization : case study Google cloud – Hypervisors : Case study VMware vSphere - Machine Imaging – Capacity Planning with baseline metrics, measurement, load testing, network capacity and scaling – PaaS services : Case study Force.com – PaaS Frameworks: Case study Drupal, EccenbtexAppBaseSpuarespace ,WaveMaker and Wolf.

UNIT III - CLOUD SERVICE PROVIDERS

Google Web Services : Explore and survey Google Application, Google analytics, Google Translate, Google Toolkit, APIs and Google App Engine - Amazon Web services: Components, Elastic Compute Cloud (EC2), Amazon Storage Systems, Amazon Elastic Block Store, and Amazon Database Services – Microsoft Cloud Services : Windows Azure platform and Windows Live.

UNIT IV - CLOUD INFRASTRUCTURE AND SECURITY

Cloud Management: Responsibilities, Lifecycle, Management Products and Standards -Cloud security: CSA Cloud Reference Model – Implement Cloud security for Infrastructure, Data, Network, Storage and Host - Disaster recovery and management.

UNIT V - SOA, STORAGE AND BACKUP

Network service model infrastructure, Communication and Management of SOA – Moving applications to cloud, Service attributes and Cloud bursting – Cloud storage, provisioning, unmanaged and managed storage – Cloud backup, types and features and storage interoperability – Cloud Mail services.

TEXT BOOKS

1. Barrie Sosinsky (2011), “Cloud Computing Bible”, Wiley Publishing Inc., New York
2. Kris Jamsa (2012), “Cloud Computing: SaaS, PaaS,IaaS, Virtualization, Business Models, Security and More”, Jones and Bartlett Learning LLC, Boston, USA

REFERENCES

1. George Reese (2009), “Cloud Application Architectures: Building Applications and Infrastructures in the cloud” ,O’Reilly Media Inc. Cambridge,USA
2. Anthony T Velte, Toby J Velte, Robert Elsenpeter (2010), “Cloud Computing: A practical approach” ,McGrawHill, New Delhi.

Course Nature: Theory				
Assessment Method(Maximum marks)				
In Semester	Assessment Tool	Assignment I	Assignment II	Total
	Marks	15	15	30
End Semester				70
Total				100

Course Code	Course Title	L	T	P	Total LTP	C
MCAD22E4	INTERNET OF THINGS (IOT)	3	1	0	4	4

INSTRUCTIONAL OBJECTIVES At the end of this course the learner is expected:		Student Outcomes				
1.	To understand the need to Explore the system management and domain for various applications of IoT	**a**				
2.	To know the categorize the various protocols that are used for developing IoT applications.		**g**			
3.	To analyze the deploy an IoT application and connect to the cloud		**b**			
4.	To enable the learner for aspiring careers in develop IoT application for real time scenario			**l**	**k**	**j**

UNIT 1: INTRODUCTION

Definition& Characteristics of IoT, Physical design of IoT, Things in IoT, IoT protocols, logical Design of IoT, IoT Functional Blocks ,IoT Communication Model and IoT Communication APIs, IoT Enabling Technologies, Wireless Sensor Networks, Cloud Computing, Big Data Analytics, Communication Protocols, Embedded Systems, IoT Levels and Deployment Templates, Levels 0, Levels 1, Levels 2, Levels 3, Level 4, Level 5, IOT Applications

UNIT 2: INTRODUCTION

Application of IoT,Home Automation, Cities,Industry, Health & Lifestyle, Discuss Health , Lifestyle problem, M2M, Architecture of M2M, SDN, Architecture of SDN, NFV for IOT, Architecture of NFV, IoT System Management, Advantages of IoT system management, Need for IoT , Systems Management, Disadvantages of IoT system management, Simple Network Management Protocol, Limitations of SNMP, Network Operator, Requirements

UNIT 3: INTRODUCTION ABOUT IOT PROTOCOLS

Infrastructure , 6LowPAN, Architecture of 6LowPAN, Ipv6, Architecture of Ipv6, Comms / Transport, Wifi, Bluetooth, mDNS , Discovery, Physical Web, DNS-SD, Data Protocols MQTT, Examples of MQTT, Difference between MQTT and HTTP, CoAP, AMQP, Types of CoAP, Request and Response methods, Pros and Cons of CoAP, Semantic, JSON- LD

UNIT 4: IOT PLATFORMS DESIGN METHODOLOGY

Purpose & Requirements, process model specification, domain model specification, Information model specifications, service specifications, Iot level specifications, Functional view specifications, operational view specifications. Device & component Integration, Application development, IoT System for Weather Monitoring, Purpose & Requirements, process model specification, domain model specification, Information model specifications, service Specifications, Iot level specifications, Device & component Integration, Application development, IoT System for Agriculture, Purpose & Requirements, process model specification, domain model specification, Information model specifications, service specifications, Iot level specifications, Functional view specifications, operational view specifications. Device & component Integration, Application development, Introduction to Cloud Storage Models, Arduino, Rasberry pi, Explanation of raspberry pi pin diagram, Introduction to Cloud StorageCommunication APIs, Python Web Application Framework, Django Architecture Design of Weather Monitoring using Django, Starting Development with Django Toolkit.

UNIT 5: INTRODUCTION ABOUT RESTFUL API

Designing a RESTful Web API, Amazon Web Services, Amazon Web Services for IoT, Creating a ID in Amazon, EC2, Implementation of EC2, Autoscaling, Implementation of Autoscaling, S3, Implementation of S3, RDS, Implementation of RDS, DynamoDB, Implementation of DynamoDB, Kinesis, Implementation of Kinesis, Case studies – Environment, IoT systems for weather Reporting Bot, Air Pollution Monitoring System, Forest Fire Detection, Case studies - IoT system for Energy, Smart grid, Renewable Energy Systems

TEXTBOOK:

1. ArshdeepBahga and Vijay Madisetti, "Internet of Things - A Hands-on Approach", Universities Press, 2015.(Unit I –Unit V)
2. Dieter Uckelmann et.al, "Architecting the Internet of Things", Springer, 2011.
3. CunoPfister, "Getting Started with the Internet of Things", O'Reilly, 2011.

REFERENCE:

1. Adrian McEwen, Hakim Cassimally, "Designing the Internet of Things", Wiley, 2014.
2. HonboZhou , "The Internet of Things in the Cloud: A Middleware Perspective ", CRC Press , 2012.
3. Olivier Hersent, David Boswarthick, Omar Elloumi, "The Internet of Things – Key applications and Protocols", Wiley, 2012.

Course Nature: Theory				
Assessment Method(Maximum marks)				
In Semester	Assessment Tool	Assignment I	Assignment II	Total
	Marks	15	15	30
End Semester				70
Total				100