LIST OF OPEN ELECTIVES
TO BE OFFERED IN THE EVEN SEMESTER (MIT CAMPUS)

SL. NO.	COURSE CODE	COURSE TITLE	CATEGORY	CONTACT PERIODS	L	T	P	C
Faculty of Electrical Engineering								
Department of Instrumentation Engineering								
B.E. Electrical and Instrumentation Engineering								
1.	EI7691	Industrial Automation Systems	OE	3	3	0	0	3
2.	EI7692	Introduction to Process Data Analytics	OE	3	3	0	0	3
Faculty of Mechanical Engineering								
Department of Aeronautical Engineering								
B.E. Aeronautical Engineering								
3.	AE7691	Control Engineering Principles	OE	3	3	0	0	3
4.	AE7692	Fundamentals of Aerodynamics	OE	3	3	0	0	3
Department of Production Technology								
5.	PR7691	Polymers and Composites	OE	3	3	0	0	3
6.	PR7692	Operations Management	OE	3	3	0	0	3
Faculty of Information and Communication Engineering								
Department of Electronics Engineering								
B.E. Electronics and Communication Engineering								
7.	EC7693	Computer vision and Machine Learning	OE	3	3	0	0	3
8.	EC7694	Introduction to Communication Systems	OE	3	3	0	0	3
Department of Information Technology								
B.Tech. Information Technology								
9.	IT7692	Introduction to OOPS Concepts	OE	3	3	0	0	3
10.	IT7693	Introduction to Internet of Things	OE	3	3	0	0	3

EI7691 INDUSTRIAL AUTOMATION SYSTEMS LT P C
3 0 0 3

COURSE OBJECTIVES:

- To introduce the concept of PLC, DCS and SCADA
- To expose students to different types of transmitters, Final Control elements and actuators
- To teach students about the roll of Computers in Process Industries
- To familiarize students on Programming of PLC with typical case studies
- To teach about the various sub systems of DCS

UNIT I INTRODUCTION 9

Need for automation systems - Architecture of Industrial Automation system. Introduction to PLC, SCADA and DCS – Introduction to Industrial Data Networks:- Foundation Field Bus and Profibus.

UNIT II FIELD DEVICES 9

Conventional / Smart Process Transmitters:- Temperature, Pressure, Flow, Level and pH Measurement - Final Control Elements:- Actuators: Pneumatic and electric actuators - Control Valves - Thyrister Power Controller. Introduction to DC and AC Servo Drives for motion control – Interfacing Field devices with I/O Sub Systems.

UNIT III COMPUTER AIDED MEASUREMENT AND CONTROL SYSTEMS 9

Role of computers in measurement and control - Elements of computer aided measurement and control:- Man-Machine interface, computer aided process control hardware and software – Industrial Internet of things (I^2oT) – Cyber Security for Industrial automation

UNIT IV PROGRAMMABLE LOGIC CONTROLLERS 9

Programmable Logic Controllers:- Hardware of PLC - PLC programming:-Ladder diagram with examples - PLC Communication and networking - Case studies:- Bottle filling application and Elevator control.

UNIT V DISTRIBUTED CONTROL SYSTEM 9

DCS:- LCU-Shared communication facility- Display Hierarchy- High Level and Low Level interfaces - Case studies:- DCS in cement plant and thermal power plant.

TOTAL: 45 PERIODS

COURSE OUTCOMES:

- Gain knowledge on basics of Industrial Automation
- Students will be able to Develop Ladder programmes for PLC
- Will be able to recommend right choice of automation systems for a given application

REFERENCES:

1. S.K.Singh, “Industrial Instrumentation”, Tata Mcgraw Hill, 2nd edition companies,2003.
2. C D Johnson, “Process Control Instrumentation Technology”, Prentice Hall India,8th Edition, 2006.
3. E.A.Parr, Newnes ,NewDelhi,“Industrial Control Handbook”,3rd Edition, 2000.
4. Gary Dunning, Thomson Delmar,“Programmable Logic Controller”, CeneageLearning, 3rd Edition,2005.
5. Lucas, M.P., “Distributed Control System”, Van Nostrand Reinhold Company, New York, 1986.

EI7692	INTRODUCTION TO PROCESS DATA ANALYTICS	L	T	P	C
		3	0	0	3

COURSE OBJECTIVES:

To introduce students the basic concepts of

- Experimental Design
- Linear Regression Analysis
- Linear Model Selection and Regularization
- Classification
- Process Identification, Performance Monitoring and Soft Sensor Design.

UNIT I INTRODUCTION 9

Introduction to Process data analytics and Statistical learning - Review of Linear Algebra Concepts – Review of Probability & Statistics - Design of experiments - Industrial case studies on factorial experiments.

UNIT II REGRESSION 9

Linear Regression:- Simple Linear Regression, Multiple Linear Regression - K-nearest neighbours regression – Practical Consideration in the Regression Model - Validation methods to assess model quality:-The validation set approach, Leave-One-Out Cross Validation, k-Fold Cross Validation – Bias-variance Trade-off for k-Fold Cross Validation

UNIT III LINEAR MODEL SELECTION & REGULARIZATION 9

Subset Selection: - Best Subset Selection, Step-wise Selection and Choosing the Optimal Model – Shrinkage Methods: - LASSO, Ridge regression, Elastic nets – Dimension reduction Methods:- Principal Components Regression, Partial Least Squares.

UNIT IV SUPERVISED LEARNING WITH REGRESSION AND CLASSIFICATION TECHNIQUES 9

Logistic regression– Linear Discriminant Analysis - Quadratic Discriminant Analysis – Regression & Classification Trees – Support Vector Machines - Random forests, Bagging and boosting - Neural Networks – Deep Learning

UNIT V APPLICATIONS 9

Process data analysis for system identification (under open and closed loops) - Controller Performance Monitoring - Principal components analysis (PCA) for Process Monitoring and Partial Least Squares (PLS) for soft-sensor design - Data-based causality analysis for identification of process topology.

TOTAL: 45 PERIODS

COURSE OUTCOME (Cos):

- Be able to apply Design of Experiments for Problem solving and Process Troubleshooting
- Be able to select the right choice of regression method for a given application.
- Be able to select the right choice of classification method for a given application.
- Be able to systematically carryout System Identification, Process & Performance Monitoring.
- Be able to cohesively analyze alarm data, process data and process connectivity information

REFERENCE BOOKS:

1. Gareth James, Daniela Witten, Trevor Hastie, Robert Tibshirani, An Introduction to Statistical Learning with Applications in R, Springer Texts in Statistics, 2013.
2. Thomas A. Runkler, Data Analytics: Models and Algorithms for Intelligent Data Analysis, Springer Vieweg, 2nd Edition, 2016.
3. Ethem Alpaydin, Introduction to Machine Learning, MIT Press, 2013
4. Arun K. Tangirala, Principles of System Identification – Theory and Practice, CRC Press, 2015.
5. Huang, B. and Shah, S.L., Performance Assessment of Control Loops: Theory and Applications, Springer-Verlag, 1999.
6. Fan Yang, Ping Duan, Sirish L Shah, Tongwen Chen, Capturing Connectivity and Causality in Complex Industrial Processes, Springer, 2014.

AE7691 CONTROL ENGINEERING PRINCIPLES L T P C

3 0 0 3

OBJECTIVE:

- To introduce the mathematical modeling of systems, open loop and closed loop systems and analyses in time domain and frequency domain.
- To impart the knowledge on the concept of stability and various methods to analyze stability in both time and frequency domain.
- To introduce sampled data control system.

UNIT I MATHEMATICAL MODELLING 9

Introduction – transfer function – simple electrical, mechanical, ,pneumatic , hydraulic and thermal systems – analogies

UNIT II FEEDBACKCONTROL SYSTEMS 9

Control system components - Block diagram representation of control systems, Reduction of block diagrams, Signal flow graphs, Output to input ratios.

UNIT III TIME DOMAIN ANALYSIS 9

Response of systems to different inputs viz., Step impulse, pulse, parabolic and sinusoidal inputs, Time response of first and second order systems, steady state errors and error constants of unity feedback circuit.

UNIT IV STABILITY ANALYSIS 12

Necessary and sufficient conditions, Routh-Hurwitz criteria of stability, Root locus and Bode techniques, Concept and construction, frequency response.

UNIT V STATE SPACE TECHNIQUE 6

State vectors – state space models -Digital Controllers – design aspects

TOTAL: 45 PERIODS

OUTCOMES:

- Ability to apply mathematical knowledge to model the systems and analyse the frequency domain.
- Ability to check the stability of the both time and frequency domain

TEXT BOOKS:

1. OGATO, Modern Control Engineering, Prentice-Hall of India Pvt. Ltd., New Delhi, 1998.
2. Azzo, J.J.D. and C.H. HoupisFeed back control system analysis and synthesis, McGraw-Hill international 3rs Edition, 1998.

REFERENCES:

1. Kuo, B.C. Automatic control systems, Prentice-Hall of India Pvt. Ltd., New Delhi, 1998.
2. Houpis, C.H. and Lamont, G.B. Digital control Systems, McGraw Hill Book co., New York, U.S.A. 1995.
3. Naresh K Sinha, Control Systems, New Age International Publishers, New Delhi,1998.

AE7692 FUNDAMENTALS OF AERODYNAMICS L T P C

3 0 0 3

OBJECTIVES:

- to introduce the basic concepts of mass, momentum and energy conservation relating to Aerodynamics.
- to make the student understand the fundamentals of theory of airfoils and wing sections.
- to introduce fundamental concepts in supersonic flows and nature of turbulence.

UNIT I FUNDAMENTAL CONCEPTS 10

Fundamental fluid flow equations – incompressible and compressible flows – low speed and high speed flows – rotational and irrotational flows - System and Control volume approach -Euler equation – incompressible and compressible forms of Bernoulli's Equation.Circulation and Vorticity, - Streamline, Stream Function, Potential Function, Equi-potential Lines – Forces & moment coefficients.Pressure distribution on an airfoil.Types of drag.Aerofoil characteristics.

UNIT II TWO DIMENSIONAL INVISCID INCOMPRESSIBLE FLOW 8

Elementary Flows and their combinations – uniform flow - Source Flow & sink flow – doublet flow – Rankine oval – vortex flow - Ideal Flow over a circular cylinder, D'Alembert's Paradox, Magnus effect, - Real flow over smooth and rough cylinder,.

UNIT III AIRFOIL AND FINITE WING THEORY 9

Helmholtz's theorems -Starting Vortex, Kuttacondition -Thin Airfoil theory and its applications – finite wing theory for subsonic flows and its applications

UNIT IV PRELIMINARY ASPECTS OF COMPRESSIBLE FLOW 9

A brief of thermodynamics. Compressibility - formation of shock waves and expansion waves – Speed of sound - Mach waves – Prandtl-Meyer expansion – change of flow properties across shock waves and expansion waves

UNITV INTRODUCTION TO LAMINAR AND TURBULENT FLOWS 9

Subsonic compressible flow over airfoils.Velocity potential equation.Linearized velocity potential equation.Prendtl-Glauert compressibility correction, Critical Mach. No. – Drag divergence Mach no. – Area rule, Supercritical airfoils.

TOTAL: 45 PERIODS

OUTCOMES:

At the end of the course students will

- have a good foundation knowledge in both subsonic and supersonic flows
- acquire the ability to perform basic calculations on estimation of skin friction drag
- have knowledge on turbulent nature of flows
- have the capability to estimate theoretically aerodynamic coefficients

TEXTBOOKS:

1. E. L. Houghton & N. B. Carruthers, " Aerodynamics for Engineering students", Edward Arnold Publishers Ltd., London, 1989.
2. Anderson, J.D., Fundamentals of Aerodynamics, McGraw-Hill Education; 5th edition, 2010.

REFERENCES:

1. Milne Thomson, L.H., Theoretical Aerodynamics, Macmillan, 1985.
2. John J Bertin., Aerodynamics for Engineers, Prentice Hall publishers 6th edition, 2013.
3. Clancy, L J., Aerodynamics, Shroff publishers 2006.

PR7691 POLYMERS AND COMPOSITES L T P C
3 0 0 3

OBJECTIVE

- To enlighten the students about the various composite production methods

UNIT I INTRODUCTION TO COMPOSITES 9

Definition and fundamentals of composites – need for composites – enhancement of properties - Reinforcement, classification, general characteristics, rule of mixture – Theory of composites – Mechanical behavior – Stress strain relationships. Applications of various types of composites.

UNIT II INTRODUCTION TO FIBRES AND COMPOSITE MATERIALS 9

Fibres – Types, Fabrication, Structure, properties and applications – Glass, Boron, carbon, polyethylene, Kevlar, Aramid, Alumina, SiC ,Si_3N_4, B_4C, ceramic and metallic fibers whiskers – Matrix materials structure – Polymers – metals and ceramics – Physical and chemical properties.

UNIT III POLYMER MATRIX COMPOSITES 9

Open mould process, bag moulding, Hand layup and spray up techniques filament winding, compression and transfer moulding, BMC and SMC– pultrusion – centrifugal casting – injection moulding – structure, properties and application of PMC's – Carbon Matrix Composites – Interfaces – Properties – recycling of PMC.

UNIT IV METAL MATRIX COMPOSITES 9

Processing of MMCs: Types, Important metallic materials, Processing – solid state, Liquid state, deposition, insitu fabrication methods. Interfaces – diffusion bonding – powder metallurgy technique - properties - Applications.

UNIT V CERAMIC MATRIX COMPOSITES 9

Ceramic matrix materials – Processing – Hot pressing, liquid infiltration techniques lanxide process, Insitu, solgel, chemical reaction techniques - CVD, CVI process. Interface in CMCs. Thermal shock resistance. Applications. Properties. Surface treatment.

TOTAL: 45 PERIODS

OUTCOME:

- Knowledge about various composites Processing Techniques are well known to the students.

TEXT BOOKS:

1. Mallick P.K., "Fiber-Reinforced Composites: Materials, Manufacturing, and Design", Third Edition, CRC Press, Taylor & Francis group, 2007.
2. Krisnan K Chawla, “Composite materials science and engineering”, International edition, Springer, 2006

REFERENCES:

1. T.W.Clync and P.J. Withers, “Introduction to Metal Matrix Composites”. Cambridge University Press, 1993.
2. B.Strong, “Fundamentals of composite manufacturing”, SME, 1989 S.C.Sharma, “Composite materials”, Narosa publications, 2000
3. “Short term course on advances in composite materials”, “composite technology centre, Department of Metallurgy, IIT – Madras, December 2001.
4. Weatherhead R.G. “FRP technology” (Fibre Reinforced Resin System), Applied Science Publishers Limited, London, 1990.
5. Chawla K.K. “Composite Materails”, Springer Verlag, 1987
6. Mathews F.L. and Rawlings R.D., “Composite materials, Engineering and Science”, Chapman. Woodhead Publishing, 1999.
7. Kenneth G.Budinski and Michael K. Budinski, “Engineering Materials”, Prentice Hall of India pvt ltd., 4th Indian reprint, 2002.

PR7692 OPERATIONS MANAGEMENT L T P C
3 0 0 3

OBJECTIVE:

The students will be able to use these techniques while managing the manufacturing operations.

UNIT I FORECASTING 6

Purpose of forecasting – Forecasting methods – Opinion and judgemental method – Time series methods – Regression and correlation methods – Exponential smoothing.

UNIT II SCHEDULING AND SEQUENCING 9

Scheduling – Single criterion rules – Critical ratio – Sequencing – Two machine problems – Johnson’s algorithm – Three or more machines problems – Graphical method.

UNIT III INVENTORY CONTROL 11

Purpose or inventory – Basic EOQ model - Quantity discounts – P system – Q system – ABC analysis– MRP – Manufacturing batch size model – Multi item EOQ models with constraints – Aggregate planning.

UNIT IV PROJECT MANAGEMENT 9

Project Network analysis – Critical path method (CPM) – Programme Evaluation and Review Technique (PERT) – Project Crashing.

UNIT V PLANT ENGINEERING AND WORK STUDY 10

Plant location – Plant layout – Materials handling – Method study – steps in Method study – Work measurement – Time study – Work sampling.

TOTAL: 45 PERIODS

OUTCOMES:

- The student can utilise the knowledge of forecasting, scheduling and sequencing for manufacturing operations
- The student will be able to apply the knowledge of inventory management, plant engineering and work study on real life industrial problems.

TEXT BOOKS:

1. Dr.R. Kesavan.C. Elanchezian and T.Sundar Selwyn, Engineering Management, Eswar Press, Chennai – 2005.
2. R. Paneerselvam, Production and Operations Management, Prentice Hall of India, 2002.

REFERENCES:

1. Dr.R. Kesavan, C.Elanchezian and B.Vijayaramnath, Production Planning and Control, Anuratha Publications, Chennai – 2008.
2. Martand T. Telsang, Production Management, S.Chand & Co., 2005.
3. Thomas E.Mortan, Production and Operations Management, Vikas Publications, 2003.

EC7693 COMPUTER VISION AND MACHINE LEARNING L T P C
3 0 0 3

OBJECTIVES:

- To provide the basic machine learning concepts and their application in computer vision problems
- To understand simple image processing techniques, and algorithms
- To give an exposure to selected machine learning concepts, techniques, and algorithms

UNIT I INTRODUCTION TO COMPUTER VISION 9

Point operators - Linear filtering - neighborhood operators - Feature detection and matching

UNIT II SEGMENTATION 9

Active contours - Split and merge - Mean shift and mode finding - Normalized cuts - Graph cuts and energy-based methods

UNIT III MOTION ESTIMATION 9

Translational alignment - Parametric motion - Optical flow - Object detection - Face recognition- Instance recognition -Category recognition - Context and scene understanding

UNIT IV MACHINE LEARNING MODELS 9

Types - Supervised and Unsupervised - Parametric and non-parametric models - discrete and continuous distributions - Generative models for discrete data - Gaussian models

UNIT V LEARNING ALGORITHMS 9

Decision Trees - Multilayer Perceptrons - Kernel Machines - hidden Markov models - Deep learning - Applications of deep networks

TOTAL: 45 PERIODS

OUTCOMES:

Upon successful completion of this course, students will be able to:

- Explore the main challenges behind selected contemporary image processing and computer vision problems.
- Demonstrate the principles and applications of contemporary machine learning techniques.
- Implement machine learning algorithms and apply them to image and video - related problems

TEXT BOOKS:

1. Richard Szeliski , 'Computer Vision: Algorithms and Applications' Springer, 2011.
2. Kevin P. Murphy 'Machine Learning - A Probabilistic Perspective', The MIT Press Cambridge, Massachusetts, London, England, 2012.

REFERENCES:

1. Ethem Alpaydın , 'Introduction to Machine Learning' The MIT Press Cambridge, Massachusetts London, England, II Edition , 2010
2. Simon J.D. Prince, Computer Vision: Models, Learning, and Inference' Cambridge University Press 2012.

EC7694 INTRODUCTION TO COMMUNICATION SYSTEMS L T P C
3 0 0 3

OBJECTIVES :

- To introduce concept of basic analog and digital communication systems.
- To understand the various modulation techniques for analog and digital communication systems
- To study the wired channel on communication systems and digital communication

UNIT I ANALOG COMMUNICATIONS 9

Linear modulation and demodulation - double sideband, amplitude modulation, envelope detection, hilbert transform, analytic signal, single sideband.

UNIT II ANGLE MODULATIONS 9

Frequency Modulation, narrowband signals, bessel functions, Carson's rule -bandwidth, demodulation, Phase-locked loops,

UNIT III DIGITAL COMMUNICATIONS 9

Nyquist sampling theorem - Pulse amplitude modulation, Pulse code modulation - quantization noise, delta modulation, DPCM, ADPCM, Multiplexing and Multiple Access Techniques - FDM and FDMA, TDM and TDMA, CDMA

UNIT IV DIGITAL MODULATION TECHNIQUES 9

Binary Phase Shift Keying - Binary Frequency Shift Keying - Pulse Amplitude Modulation -PAM, On - Off Keying OOK. Optimum receiver structures for digital communication - matched filtering, co-relation detection, probability of error.

UNIT V WIRELESS CHANNEL AND PERFORMANCE OF DIGITAL MODULATION 9

overview of wireless systems-capacity of wireless channel-capacity flat fading channel, channel distribution information known - channel side information at receiver -channel information at transmitter and receiver - capacity with receiver diversity - capacity comparisons, capacity of frequency selective fading channels.

TOTAL: 45 PERIODS

OUTCOMES:

Upon successful completion of this course, students will be able to:

- Understand the basic concepts of communication systems
- Use the modulation techniques for analog and digital communication
- Analyse the performance of wireless channels

TEXT BOOKS:

1. Thepdore. S.Rapport, "Wireless Communications: principles and practice" , 2nd eidtion, pearson education, india, 2009.
2. B.P.Lathi, "Modern Digital and Analog Communication systems", 3rd Edition, Oxford university press, 2007.
3. B.Sklar, "Digital Communications Fundamentals and Applications" , 2nd edition Pearson education, 2016
4. S.Haykin , " Communication systems" 3/e John Wiley 2007.

REFERENCES:

1. David Tse and Pramod Viswanath, " Fundamentals of wireless communications" Wiley series in Telecommunications, cambridge university press, 2005.
2. J.G.Proakis, M.Salehi, " Fundamentals of Communication Systems" - Pearson education 2006.
3. H. P. Hsu, Schaum outline series - "Analog and Digital Communications" TMH 2006.
4. Andrea Goldsmith, " Wireless Communications", Cambridge University Press, 2005.

IT7692 INTRODUCTION TO OOPS CONCEPTS L T P C
3 0 0 3

AIM:

The aim is to introduce the concepts Object Oriented Programming and master the OOPS concepts using C++.

OBJECTIVES:

- To introduce the concepts of Object Oriented Programming language.
- To introduce the various concepts related to inheritance and polymorphism.
- To introduce the concepts of Templates and Error Handling.

UNIT I BASIC C++ PROGRAMMING 9

C++ Programming features –Data types, variables and arrays – Operators - Pointers – references – functions - String Handling

UNIT II OBJECT ORIENTED PROGRAMMING CONCEPTS 9

Data Abstraction - Encapsulation - Class - Object – Constructors - Destructors - Static members – Constant members – Member functions - Friend functions- Role of **this** pointer – Storage classes – Copy Constructor

UNIT III INHERITANCE 9

Inheritance –Types of Inheritance –public, protected and private inheritance – Method overriding – Abstract and concrete class – Virtual class - virtual functions -dynamic memory allocation - Nested classes

UNIT IV POLYMORPHISM 9

Polymorphism – compile time and run time polymorphisms – function overloading – operators overloading – Dynamic binding - Exception handling

UNIT V ADVANCED OOPS FEATURES 9

Standard libraries - Generic Programming - templates – class template -function template – iterators – function adaptors – allocators - File handling concepts. ‘

TOTAL: 45 PERIODS

TEXT BOOKS:

1. Bjarne Stroustrup, “The C++ Programming Language”, 3rd edition, Pearson Education, 2007.
2. K R Venugopal, Rajkumar Buyya, “Mastering C++”, 2nd Edition, McGraw Hill Education, 2013.

REFERENCES:
1. Ira Pohl, “Object Oriented Programming using C++”, 2nd edition, Pearson Education, 1997.
2. Herbert Schildt, “C++: The Complete Reference”, 4th Edition, McGraw Hill Education, 2003.

IT7693 INTRODUCTION TO INTERNET OF THINGS L T P C
3 0 0 3

OBJECTIVES :
- To understand the fundamentals of Internet of Things.
- To build a small low cost IoT using sensors and Arduino board.
- To apply the concept of Internet of Things in the real world scenario

UNIT I INTRODUCTION TO THE INTERNET OF THINGS 9
What is the IoT and why is it important?- Elements of an IoT- Technology drivers- Business drivers- Typical IoT applications- Trends and implications.

UNIT II WIRELESS TECHNOLOGIES FOR THE IOT 9
Sensors and sensor nodes - Sensing devices- Sensor modules, nodes and systems- Network connectivity and protocols- Wireless sensor networks -Protocols - RFID , NFC, Zigbee, GSM, GPRS

UNIT III THE CLOUD FOR IOT 9
The Topology of the Cloud - Cloud-to-Device Connectivity - Device Ingress/Egress - Data Normalization and Protocol Translation- Infrastructure - APIs

UNIT IV IOT DESIGN METHODOLOGY 9
IoT systems management – IoT Design Methodology – Specifications Integration and Application Development, Arduino IDE – Programming - APIs

UNIT V IOT APPLICATIONS 9
Home Automation -Smart Lighting -Smart Appliances - Intrusion Detection - Smoke/Gas Detectors - Smart cities. Case Studies: e.g. sensor body-area-network.

TOTAL : 45 PERIODS

OUTCOMES:
Upon the completion of the course the student should be able to
- Design a portable IoT using Arduino boards and relevant protocols.
- Deploy an IoT application and connect to the cloud.
- Analyze applications of IoT in real time scenario

REFERENCES:
1. Arshdeep Bahga, Vijay Madisetti, “Internet of Things – A hands-on approach”, Universities Press, 2015.
2. J. Biron and J. Follett, "Foundational Elements of an IoT Solution", O’Reilly Media, 2016.
3. Keysight Technologies, “The Internet of Things: Enabling Technologies and Solutions for Design and Test”, Application Note, 2016.
4. Charles Bell, “Beginning Sensor Networks with Arduino and Raspberry Pi”, Apress, 2013