PARUL INSTITUTE OF ENGINEERING & TECHNOLOGY

STUDENT INFORMATION HANDBOOK

DEPT. OF INFORMATION TECHNOLOGY

SEMESTER 8

2020-21

P.O.LIMDA, TA. WAGHODIA, DIST VADODARA P
H.02668-260338

PARUL INSTITUTE OF ENGINEERING & TECHNOLOGY – FIRST SHIFT
EIGHT SEMESTER INFORMATION TECHNOLOGY
STUDENTS HAND-BOOK-2020-21

PARUL INSTITUTE OF ENGINEERING & TECHNOLOGY

AT & PO: LIMDA, Ta: waghodia

Dist: Vadodara

BE IT(8th SEM) ENGINEERING TIME TABLE CLASS 1 – UG COURSE

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
09:30 to 10:30				CPS :{RM}:[A-315]	BDA :{PNC}:[A-315]	BDA :{PNC}:[A-315] ERP: {SS}:[A-316]
10:30 to 11:30				BDA :{PNC}:[A-315] ERP: {SS}:[A-316]	BDA :{PNC}:[A-315]	CPS :{RM}:[A-315]
11:30 to 12:15	RECESS					
12:15 to 1:15				8ITA1 : LIBRARY 8ITA2: CPS:{RM}:[L – 9] 8ITA3: ERP:{ SS}:[L - 6]	CPS :{RM}:[A-315]	ERP: {SS}:[A-315]
1:15 to 2:15					ERP: {SS}:[A-315]	LIBRARY
02:15 to 02:30	RECESS					
02:30 to 03:30				LIBRARY	8ITA1 : BDA:{ PNC}:[L - 12] 8ITA2:BDA:{PNC}:[L – 12 8ITA3: CPS:{RM}:[L - 9]	8ITA1 : CPS:{RM}:[L - 9] 8ITA2:LIB 8ITA3: LIBRARY
03:30 to 04:30						

Google Classroom Code		ipokiis	
Sr No	Subject Name	Faculty Name	Subject Link
1	CPS	Rutvik Mehta	https://meet.google.com/bxz-cppt-pxd
2	BDA	Pintu Chauhan	https://meet.google.com/zaf-wwov-bsh
3	ERP	Shaleen shukla	meet.google.com/zhc-xbxp-sgi

PARUL INSTITUTE OF ENGINEERING & TECHNOLOGY

AT & PO: LIMDA, Ta: Vaghodia
Dist: Vadodara

BE IT(8th SEM) ENGINEERING TIME TABLE CLASS B – UG COURSE

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
09:30 to 10:30	CPS :{AK}:[A-315]	LIBRARY	CPS :{AK}:[A-315]			
10:30 to 11:30	BDA :{PNC}:[A-315]		BDA :{PNC}:[A-315] STQA: {HP}:[A-316]			
11:30 to 12:15	RECESS					
12:15 to 1:15	CPS :{AK}:[A-315]	BDA :{PNC}:[A-315] STQA: {HP}:[A-316]	LIBRARY			
1:15 to 2:15	STQA: {HP}:[A-315]	BDA :{PNC}:[A-315] STQA: {HP}:[A-316]				
2:15 to 2:30	RECESS					
02:30 to 03:30	8ITB1 :BDA:{PNC}:[L - 12] 8ITB2: CPS:{AK}:[L – 9] 8ITB3: STQA:{HP}:[L-8]	8ITB1 : LIBRARY 8ITB2:BDA:{PNC}:[L - 12] 8ITB3: CPS:{AK}:[L - 9]	8ITB1 : CPS:{AK}:[L - 9] 8IT22: LIB 8ITB3: LIBRARY			
03:30 to 04:30			8ITB2:LIBRARY			

Google Classroom Code		s5d55uf	
Sr No	Subject Name	Faculty Name	Subject Link
1	STQA	Himani Parmar	meet.google.com/cvh-wdxk-rub
2	BDA	Pintu Chauhan	https://meet.google.com/jww-teuc-mmy
3	CPS	Ashish Kumar	https://meet.google.com/ddq-wmzx-izg

PARUL INSTITUTE OF ENGINEERING & TECHNOLOGY – FIRST SHIFT
EIGHT SEMESTER INFORMATION TECHNOLOGY
STUDENTS HAND-BOOK-2020-21

Faculty Represntative Detail

Sr.No.	Faculty Name	DIV	Contact No.	Email ID
1)	JIGNASHA PARMAR	I	9998964238	jignasha.kapadiya2959@paruluniversity.ac.in
2)	PRASHANT SAHATIYA	II	8155812895	prashant.sahatiya270187@paruluniversity.ac.in

Teaching Faculty List of BE- 8th Sem IT

Sr No	Name of Faculty	Alias of Faculty	Mobile No	E-mail ID	Subject Code
1	Ashish Kumar	AK	8273671779	ashish.kumar270197@paruluniversity.ac.in	CPS
2	Rutvik Mehta	RM	9429066168	rutvik.mehta@paruluniversity.ac.in	CPS
3	Himani Parmar	HP	8200086949	himani.parmar270199@paruluniversity.ac.in	CF
4	Shaleen shukla	SS	9428282968	shaleen.shukla270186@paruluniversity.ac.in	ERP
5	Pintu Chauhan	PC	8104825695	pintu.chauhan270114@paruluniversity.ac.in	BDA

B.Tech. IT SEM-8 Teaching Scheme

Subject code	Teaching Scheme (Hours)			Credits
	Theory	Tutorial	Practical	
03105480	4	0	2	5
03108480	4	0	2	5
03105481	4	0	2	5
03108451	3	0	2	4
03108452	3	0	2	4
Total				

PARUL INSTITUTE OF ENGINEERING & TECHNOLOGY – FIRST SHIFT
EIGHT SEMESTER INFORMATION TECHNOLOGY
STUDENTS HAND-BOOK-2020-21

PARUL UNIVERSITY - FACULTY OF ENGINEERING & TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
SYLLABUS (PROPOSED) FOR 8th SEMESTER B.TECH. PROGRAMME
BIG DATA ANALYTICS (SUBJECT CODE: 03105480)
ACADEMIC YEAR 2020-21

Type of Course: B.Tech(Elective)

Prerequisite: Java Programming Basics, Database management system, data warehousing and data mining.

Rationale: This course aims to teach students the principals involved in big data analytics and their application in various areas. It will cover all the basic components of modeling of Data at enterprise level.

Teaching and Examination Scheme:

Teaching Scheme (Hrs/Week)			Cr	Examination Scheme					Total
				External		Internal			
L	T	P		Theory	Practical	Theory	*C.E.	Practical	
4	0	2	5	60	30	20	20	20	150

4L- Lectures; **T**- Tutorial/Teacher Guided Student Activity; **P- Practical**; **Cr**- Credit; **E -** End Semester Theo. Exam; **V -** End Semester Viva Exam; **M –** Mid Semester Exam; **P.A.**- Progressive Assessment

Contents:

Sr. No.	Topic	Weightage	Teaching Hrs.
1.	**Introduction :** Fundamental concepts of distributed computing,Understanding Big Data, Classification of Digital Data: Structured, Semi Structured & Un Structured , Evolution of Big Data , Definition of Big Data - Volume - Velocity -Variety, Challenges of Big Data , Why Big Data?, Traditional Business Intelligence (BI) versus Big Data , industry examples of big data , What is Big Data Analytics? , Data Science	20%	12
2.	**Basics Of Hadoop:** What is Hadoop?, Brief History of Hadoop , Why Hadoop? , RDBMS versus Hadoop , Hadoop Components , High Level Architecture of Hadoop , Key Advantages & Features of Hadoop , Data format , Hadoop distributed file system (HDFS) , Processing Data with Hadoop. Map Reduce Interface: Overview of Map Reduce, Map-Reduce workflows, anatomy of Map-Reduce job run, shuffle and sort ,task execution ,input formats , output formats	40%	22
3.	**Nosql Data Management:** Introduction to NoSQL, Types of NoSQL, Why NoSQL? , Advantages of NoSQL, Comparison of SQL, NoSQL and NewSQL , aggregates , key-value and document data models, graph databases, map- reduce, partitioning and combining	20%	12
4.	**Data Base for the Modern Web** Introduction to MongoDB key features, Core Server tools, MongoDB through the JavaScript's Shell, Creating and Querying through Indexes, Document-Oriented, principles of schema design, Constructing queries on Databases, collections and Documents , MongoDB Query Language.	15%	10
5.	**Hadoop Related Tools:** Overview of HBase, Pig introduction, Pig data model, Hive, data types and file formats, HiveQL data definition, HiveQL data manipulation, HiveQL queries, Pig Latin Overview , Pig versus Hive, Using JSON , Overview of Cassandra , Jasper Reports.	5%	8

***Continuous Evaluation:**

It consists of assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Reference Books

1. Hadoop: The Definitive Guide by Tom White, Third Edition, O'Reilley, 2012. (TextBook) Tom White; 2012; 3
2. Chris Eaton,Dirk derooset al. , "Understanding Big data ", McGraw Hill, 2012.
3. Hadoop Operations, Eric Sammer, O'Reilley, 2012. O'Reilley; 2012
4. Big data analytics with R and Hadoop, VigneshPrajapati,SPD 2013. VigneshPrajapati; 2013
5. BIG Data and Analytics , Sima Acharya, Subhashini Chhellappan, Willey
6. Programming Hive, E. Capriolo, D. Wampler, and J. Rutherglen, O'Reilley, 2012 E. Capriolo, D. Wampler, and J. Rutherglen; 2012
7. MongoDB in Action, Kyle Banker,Piter Bakkum , Shaun Verch, Dream tech Press
8. HBase: The Definitive Guide, Lars George, O'Reilley, 2011 O'Reilley; 2011

Course Outcome:

After learning the course the students shall be able to:

1. Install, configure, and run Hadoop and HDFS
2. To understand the need to integrate structured, semi-structured and unstructured data.
3. To understand the significance of big data.
4. To understand the other characteristics of data that are not definitional characteristics of big data.
5. To understand the challenges of big data and how to deal with the same.
6. To understand the role of data science.
7. Perform map-reduce analytics using Hadoop
8. Use Hadoop related tools such as HBase, Cassandra, Pig, and Hive for big data Analytics

List of Practical:

1. To understand the overall programming architecture using Map Reduce API
2. Write a program of Word Count in Map Reduce over HDFS.
3. Basic CRUD operations in MongoDB
4. Store the basic information about students such as roll no, name, date of birth , and address of student using various collection types such as List, Set and Map
5. Basic commands available for the Hadoop Distributed File System
6. Basic commands available for HIVE Query Language.
7. Basic commands of HBASE Shell.
8. Creating the HDFS tables and loading them in Hive and learn joining of tables in Hive.

Tools:

1. Avro
2. Hbase
3. HDFS
4. NOSQL
5. PIG
6. ZOOKEEPR

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EIGHT SEMESTER INFORMATION TECHNOLOGY
STUDENTS HAND-BOOK-2020-21

PARUL UNIVERSITY - FACULTY OF ENGINEERING & TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
SYLLABUS (PROPOSED) FOR 8th SEMESTER B.TECH. PROGRAMME
ADVANCE COMPUTER NETWORKS (SUBJECT CODE: 03105482)
ACADEMIC YEAR 2020-21

Type of Course: B.Tech (Elective)

Prerequisite: Fundamental of basic computer topologies, types of networks, basic networking protocols

Rationale: This course is design to provide depth knowledge of computer networks. This course also makes help to understand the working of protocols. It will help to develop their logical abilities and practically setup the network.

Teaching and Examination Scheme:

Teaching Scheme (Hrs./Week)			Credit	Examination Scheme					Total
				External		Internal			
L	T	P		Theory	Practical	Theory	*C.E.	Practical	
4	0	2	5	60	30	20	20	20	150

L-Lectures; **T-**Tutorial; **P-**Practical; **C.E.-**Continuous Evaluation

Content:

Sr. No.	Content	% Weightage	Total Hrs
1	**Foundation:** Building a Network, Requirements, Perspectives, Scalable Connectivity, Cost-Effective Resource sharing, Protocol layering, Performance, Bandwidth and Latency, Delay X Bandwidth product, Perspectives on Connecting, Classes of Links, Reliable Transmission, Stop-and-Wait, Sliding Window /SONET/SDH Standard.	10	05
2	**High Speed Networks:** Introducing ATM Technology, Explaining the basic concepts of ATM Networking, Exploring the B-ISDN reference model, Explaining the ATM Layer, Exploring ATM Physical interface, Choosing an Appropriate ATM Public Service, Introduction to X.25, Introduction to Virtual Circuit Packet	15	08
3	**Protocols and Interfaces in Upper Layers of TCP/IP :** Introducing TCP/IP suite, Explaining Network Layer Protocols, Explaining Transport	10	06
4	**Routing and Internetworking:** The global internet routing areas IPv6, Mobility and mobile IP, Intra-domain and inter-domain routings and its protocol, Multiprotocol Label Switching, Storage Area Network.	15	09
5	**Network Management & Operations:** Network management defined, Protocols and technologies, Functional area of network management, Preparing a network for management, Real world applications of proper management practices.	15	09

6	**Congestion and Traffic Control:** Congestion control in TCP variants, Traffic Characteristics, Protocols, Time and Delay Consideration, Connectivity, Availability, Reliability, and Maintainability, Throughput Calculation	**15**	**08**
7	**Multimedia over Internet :** Introduction to Multimedia Services, Explaining Transmission of Multimedia over the Internet, Explaining IP Multicasting, Explaining VOIP	**10**	**05**
8	**Adhoc Networks & Bluetooth Technology:** Adhoc Wireless Networks: issues, protocols, routing, mobility, and Energy efficiency in ad-hoc network, Bluetooth Architecture, Bluetooth Applications, The Bluetooth Protocol Stack, The Bluetooth Frame Structure	**10**	**05**

***Continuous Evaluation:**

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Text Books:

1. Computer Networks : A Systems Approach
   Larry L. Peterson & Bruce S. Davie; Morgan Kaufmann; 2nd edition

Reference Books:

1. Advance Computer Network, By Dayan and Ambawade, Dr. Deven shah, Prof. Mahendra Mehra, Wiley India
2. High-Speed Networks and Internets, Performance and Quality of Service, Second Edition, William Stallings, Pearson
3. TCP/IP Protocol Suite by Behrouz A. Forouzan
4. Computer Networks, Andrew Tanenbaum, 5th Edition, Pearson Education.
5. Computer Networks, Protocols, Standards and Interfaces Uyless Black; PHI; 2nd edition
6. C. Siva Ram Murthi, B.S. Manoj, Ad Hoc Wireless Networks: Architectures and Protocols, Prentice Hall

Course Outcome:

After learning the course the students should be able to:

1. Understand architectures of high speed network systems
2. Analyze the process of congestion and traffic management in high speed networks
3. Design routing algorithms and routing techniques.
4. Classify network services, protocols and architectures.

List of Experiments:

1. Introduction to SONET / SDH networks.
2. Introduction to wireshark and Analyse IPV4 and IPV6 packets.
4. Introduction and installation of Network Simulator (NS-2.30).
5. To study about simple TCL example in NS2.
7. To study about TCP Flavors and their comparison in NS2.
8. To create wireless topology for Five nodes using NS2.
9. To create wired cum wireless topology using NS2.
10. Case Study about Bluetooth Technology.
11. Write a program to transfer the contents of a requested file from server to the client using TCP/IP Sockets (using TCP/IP Socket programming).
12. Write a program to implement dynamic routing strategy in finding optimal path for data transmission (Bellman ford algorithm).
13. Write a program to implement Link State Routing (Dijkstra Algorithm).

PARUL UNIVERSITY - FACULTY OF ENGINEERING & TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
SYLLABUS (PROPOSED) FOR 7th SEM B. TECH. PROGRAMME
SOFTWARE TESTING (03105483)
ACADEMIC YEAR 2020-21

Type of Course: B.Tech. (Elective)

Prerequisite: Basic knowledge of software applications.

Rationale: This course provides a broad introduction to software testing. Students will learn to the design of test cases with test management and test automation techniques.

Teaching and Examination Scheme:

Teaching Scheme (Hrs/Week)			Cr	Examination Scheme					Total
				External		Internal			
L	T	P		Theory	Practical	Theory	*C.E.	Practical	
4	0	2	5	60	30	20	20	20	150

L- Lectures; **T**- Tutorial/Teacher Guided Student Activity; **P- Practical**; **Cr**- Credit; ***C.E** – Continuous Evaluation (Presentation, Assignment, Progressive assessment etc.)

Contents:

Sr. No.	Topic	Weightage	Teaching Hrs.
1.	**Introduction** Basic definitions – Software Testing Principles – The Tester's Role in a Software Development Organization – Origins of Defects – Cost of defects – Defect Classes – The Defect Repository and Test Design – Defect Examples – Developer/Tester Support of Developing a Defect Repository – Defect Prevention strategies,	10%	6
2.	**Test Case Design** Test case Design Strategies – Using Black Bod Approach to Test Case Design – Random Testing – Requirements based testing – Boundary Value Analysis – Equivalence Class Partitioning – Statebased testing – Cause-effect graphing – Compatibility testing – user documentation testing – domain testing – Using White Box Approach to Test design – Test Adequacy Criteria – static testing vs. structural testing – code functional testing – Coverage and Control Flow Graphs – Covering Code Logic – Paths – code complexity testing – Evaluating Test Adequacy Criteria.	20%	10
3.	**Levels of testing** The need for Levers of Testing – Unit Test – Unit Test Planning – Designing the Unit Tests – The Test Harness – Running the Unit tests and Recording results – Integration tests – Designing Integration Tests – Integration Test Planning – Scenario testing – Defect bash elimination System Testing – Acceptance testing – Performance testing – Regression Testing – Internationalization testing – Ad-hoc testing – Alpha, Beta Tests – Testing OO systems – Usability and Accessibility testing – Configuration testing – Compatibility testing – Testing the documentation – Website testing.	20%	10
4.	**Test Management** People and organizational issues in testing – Organization structures for testing teams – testing services – Test Planning – Test Plan Components – Test Plan Attachments – Locating Test Items – test management – test process – Reporting Test Results – The role of three groups in Test Planning and Policy Development – Introducing the test specialist – Skills needed by a test specialist	20%	10

Sr. No.	Topic	Weightage	Teaching Hrs.
	– Building a Testing Group		
5.	**Test Automation** Software test automation – skill needed for automation – scope of automation – design and architecture for automation – requirements for a test tool – challenges in automation – Test metrics and measurements – project, progress and productivity metrics.	15%	8
	Software Maintenance Need and Types of Maintenance, Software Change Management, Version Control, Change control and Reporting, Re-engineering, Reverse Engineering, Feasilibility Analysis, Risk Assessment and Mitigation, Software Quality Assurance (SQA), Project Metrics.	15%	8

Reference Books:

1. Srinivasan Desikan and Gopalaswamy Ramesh, “Software Testing – Principles and Practices”, Pearson.
2. Ron Patton, “Software Testing”, Second Edition, Sams Publishing, Pearson Education.
3. Ilene Burnstein, “Practical Software Testing”, Springer International Edition.
4. Bob Hughes, M.Cotterell, Rajib Mall “Software Project Management”, McGrawHill.

1. Design test cases suitable for a software development for different domains.
2. Identify suitable tests to be carried out.
3. Document test plans and test cases designed.
4. Develop and validate a test plan.

List of Practical:

1. Understand the Automation Testing Approach.
2. Demonstrate different Testing Tools with comparison.
3. Study of Selenium tool.
4. Using Selenium IDE, Write a test suite containing minimum 4 test cases.
5. Conduct a test suite for any web site.
6. Install Selenium server and demonstrate it using a script in Java/PHP.
10. Use of different Testing Tools with comparison.
    Selenium

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STUDENTS HAND-BOOK-2020-21

PARUL UNIVERSITY - FACULTY OF ENGINEERING & TECHNOLOGY

DEPARTMENT OF INFORMATION TECHNOLOGY
SYLLABUS (PROPOSED) FOR 8th SEM B. TECH. PROGRAMME
ENTERPRISE RESOURCE PLANNING (03108480)-DEPARTMENTAL ELECTIVE-4
ACADEMIC YEAR 2020-21

Type of Course: B.Tech.(Elective)

Prerequisite: Requires Basic Knowledge of Computer and organization Model

Rationale: This course is design to provide basic ideas of the management of enterprise. This helps building ideas about the automation of complex activities in organization.

Teaching and Examination Scheme:

Teaching Scheme (Hrs/Week)			Cr	Examination Scheme					Total
				External		Internal			
L	T	P		TH (E)	PRA(V)	TH(I)	C.E.	PRA. (I)	
4	0	2	5	60	30	20	20	20	150

L- Lectures; **T**- Tutorial/Teacher Guided Student Activity; **P- Practical**; **Cr**- Credit; **E -** End Semester Theo. Exam; **V -** End Semester Viva Exam; **M –** Mid Semester Exam; **P.A.**- Progressive Assessment

Contents:

Sr. No.	Topic	Weightage	Teaching Hrs.
1	**Introduction to ERP** Enterprise: Overview of Integrated Management Information, Business Modeling, Integrated Data Model, Concept of organizational resource.	10%	3
2	**Enterprise and related Technologies** BIS-Business Information System, MIS - Management Information System, EIS - Executive Information System, On-line Analytical Processing (OLAP), Business Process Re-engineering (BPR), Supply Chain Management (SCM), Customer Relationship Management (CRM).	15%	6
3	**ERP Business Module:** Finance, Plant Maintenance, Manufacturing (Production), Material Management, Sales & Distribution Quality Management, Human Resource Management,	15%	7
4	**ERP Manufacturing Perspective** Material Requirement Planning, Manufacturing Resource Planning, Distributed Requirement Planning, Product Data Management, MTO - Make to Order and MTS - Make to Supply, ATO - Assemble to Order ETO - Engineer to Order, CTO - Configure to Order.	15%	5
5	**ERP life cycle & their Phases:-** Package Evaluation, Planning Phase, Gap Analysis, Reengineering, Configuration, Testing, Implementation, Post-implementation	10%	3
6	**Future direction and trends in ERP** Future of ERP Solutions in Today's Organization, Faster implementation methodology, Enterprise application integration	10%	3
7	**SAP** Introduction to SAP, SAP Business Suite, SAP architecture, SAP ERP Functional & Technical Modules, How to install SAP IDES for practice	10%	3
8	**ERP to E-Commerce**	15%	6

	E-Commerce to E-business, E-Business structural transformation, Memo to CEO E-Procurement, E-Governance, Developing the E-Business Design, Customer Experience, Create the new techo-enterprise, new generation e-business leaders, Integrate Sales and Service, Web based E-commerce-Market, Steps in setting up business on Internet		

***Continuous Evaluation:**

It consists of assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Course Outcome:

After learning the course the students should be able to explain following ERP concepts:

1. Functioning of ERP system Administration and Business integration.
2. Activities of Enterprise planning and categorization of modules
3. Organizational and concept of Hierarchy of Enterprise
4. Various Business model and Systems in enterprise

Text Book:

1. Enterprise Resourse Planning by Alexis Leon-Tata Mcgraw Hill

Reference Books:

1. Enterprise Resource Planning Diversified by Alexis Leon, - TMH
2. Guide to Planning ERP Application by Annetta Clewwto and Dane Franklin, - McGRaw-Hill, 1997
3. E-commerce: Strategy, Technologies and Applications, David Whiteley, Tata McGraw Hill
4. SAP University Alliances 1.0 by Bret Wagner, Stefan Weidner, Stephen Tracy

List of Practical:

PRACTICAL SET-1

Find case study of any ERP software. Make a document briefing the introduction, the list of modules included i it, benefits of ERP solution, reason of failure of the ERP software identified and points to keep in mind whil finalizing an ERP.

PRACTICAL SET-2

Case Study : Management Information System and its functional subsystem (PUMIS)

PRACTICAL SET-3

Case Study : Identification and brief introduction of different Modules in any ERP package (e.g. Oodo, ERP Next etc)

PRACTICAL SET-4

Case Study: ERP Implementation life cycle at any Industry.

PRACTICAL SET-5

Case Study : Introduction to SAP

PRACTICAL SET-6

Case study: JD Edward Tool.

PRACTICAL SET-7

Designing an E-Commerce Website.

PRACTICAL SET-8

Designing any two ERP Module (e.g. Finance, ManufacturingPurchase etc.)

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PARUL UNIVERSITY - FACULTY OF ENGINEERING & TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
SYLLABUS (PROPOSED) FOR 8th SEM B. TECH. PROGRAMME
COMPUTER VISION (03105453)
ACADEMIC YEAR 2020-21

Type of Course: Computer Science & Engineering

Prerequisite: Computer Graphics, Artificial Intelligence, Data Mining

Rationale: Computer Vision focuses on development of algorithms and techniques to analyze and interpret the visible world around us. This requires understanding of the fundamental concepts related to multi-dimensional signal processing, feature extraction, pattern analysis visual geometric modeling, stochastic optimization etc. Knowledge of these concepts is necessary in this field, to explore and contribute to research and further developments in the field of computer vision. Applications range from Biometrics, Medical diagnosis, document processing, mining of visual content, to surveillance, advanced rendering etc.

Teaching and Examination Scheme:

Teaching Scheme (Hrs/Week)			Cr	Examination Scheme				Total
				External		Internal		
L	T	P		TH (E)	PRA(V)	Mid Exam (M)	P.A. (I)	
4	0	2	5	60	30	40	20	150

L- Lectures; **T**- Tutorial/Teacher Guided Student Activity; **P- Practical**; **Cr**- Credit; **E -** End Semester Theo. Exam; **V -** End Semester Viva Exam; **M –** Mid Semester Exam; **P.A.**- Progressive Assessment

Contents:

Sr. No.	Topic	Weightage	Teaching Hrs.
1.	**Digital Image Formation and low-level processing:** Overview and State-of-the-art, Fundamentals of Image Formation, Transformation: Orthogonal, Euclidean, Affine, Projective, etc; Fourier Transform, Convolution and Filtering, Image Enhancement, Restoration, Histogram Processing.	10%	2
2.	**Depth estimation and Multi-camera views**: Perspective, Binocular Stereopsis: Camera and Epipolar Geometry; Homography, Rectification, DLT, RANSAC, 3-D reconstruction framework; Auto-calibration. apparel	20%	8
3.	**Feature Extraction**: Edges - Canny, LOG, DOG; Line detectors (Hough Transform), Corners - Harris and Hessian Affine, Orientation Histogram, SIFT, SURF, HOG, GLOH, Scale-Space Analysis- Image Pyramids and Gaussian derivative filters, Gabor Filters and DWT.	15%	8
4.	**Image Segmentation:** Region Growing, Edge Based approaches to segmentation, Graph-Cut, Mean-Shift, MRFs, Texture Segmentation; Object detection.	15%	6
5.	**Pattern Analysis:** Background Subtraction and Modeling, Optical Flow, KLT, Spatio-Temporal Analysis, Dynamic Stereo; Motion parameter estimation.	15%	8
6.	**Shape from X:** Light at Surfaces; Phong Model; Reflectance Map; Albedo estimation; Photometric Stereo; Use of Surface Smoothness Constraint; Shape from Texture, color, motion and edges.	15%	8
7.	**Computer Vision Applications:** Recent Trends in Computer Vision and Application in Agriculture and Virtual Reality	10%	2

TEXT BOOKS:

1. Computer Vision: Algorithms and Applications, Richard Szeliski,Springer-Verlag London Limited 2011.
2. Computer Vision: A Modern Approach, D. A. Forsyth, J. Ponce, Pearson Education, 2003.

Reference Books:

1. Richard Hartley and Andrew Zisserman, Multiple View Geometry in Computer Vision, Second Edition, Cambridge University Press, March 2004.
2. K. Fukunaga; Introduction to Statistical Pattern Recognition, Second Edition, Academic Press, Morgan Kaufmann, 1990.
3. R.C. Gonzalez and R.E. Woods, Digital Image Processing, Addison- Wesley, 1992.

Course Outcomes:

After learning the course the students shall be able to:

1. understand the application areas of Computer Vision
2. realize the revolution of Pattern Reorganizations
3. Understand building blocks of Internet of Things and characteristics.
4. Apply and implement various communication technologies of IoT in solving real-life problems.

List of Practical:

1. Enhancing Super-resolved Images, from those with Low-resolution and Low-contrast
2. Saliency detection from images of multiple objects: Top-down/Bottom-up or combination
3. Comparative Study of the Performances of very recent Feature Extractors, used for Detection, Match and Recognition (Image or Video)
4. 3-D jigsaw puzzle solving for structure reconstruction from assorted parts
5. Semi-supervised clustering for organizing large image/video datasets
6. Domain Adaptation using Kernel (or Manifold) Alignment for Object Categorization on ImageNet
7. Face Recognition from LFW/YouTube/Multi-PIE faces, in presence of occlusion and pose
8. Deep Learning on ImageNet for Object Recognition
9. Online CBIR tool to work indoor for a large category of handheld and personal items
10. Video Event Categorization (UCF-101, HMDB-51)

PARUL INSTITUTE OF ENGINEERING & TECHNOLOGY – FIRST SHIFT
EIGHT SEMESTER INFORMATION TECHNOLOGY
STUDENTS HAND-BOOK-2020-21

PARUL UNIVERSITY - FACULTY OF ENGINEERING & TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
SYLLABUS (PROPOSED) FOR 4th YEAR B.TECH. PROGRAMME
CYBER FORENSICS (SUBJECT CODE: 03105481)
ACADEMIC YEAR 2020-21

Type of Course: Computer Science & Engineering

Prerequisite: Programming Basics, Database management system, Information Security, Network Security, Computer Networks

Rationale: This course aims to teach students the principals involved in Cyber Forensics is the scientific processes of identification, seizure, acquisition, authentication, analysis, documentation and preservation of digital evidence.

Teaching and Examination Scheme:

Teaching Scheme (Hrs/Week)			Cr	Examination Scheme				Total
				External		Internal		
L	T	P		TH (E)	PRA(V)	Mid Exam (M)	P.A. (I)	
4	0	2	5	60	30	40	20	150

L- Lectures; **T**- Tutorial/Teacher Guided Student Activity; **P- Practical**; **Cr**- Credit; **E -** End Semester Theo. Exam; **V -** End Semester Viva Exam; **M –** Mid Semester Exam; **P.A.**- Progressive Assessment

Contents:

Sr. No.	Topic	Weightage	Teaching Hrs.
1.	**INTRODUCTION TO COMPUTER FORENSICS :** Introduction to Traditional Computer Crime, Traditional problems associated with Computer Crime. Introduction to Identity Theft & Identity Fraud. Types of CF techniques – Incident and incident response methodology – Forensic duplication and investigation. Preparation for IR: Creating response tool kit and IR team. – Forensics Technology and Systems – Understanding Computer Investigation – Data Acquisition.	20%	12
2.	**EVIDENCE COLLECTION AND FORENSICS TOOLS :** Processing Crime and Incident Scenes – Working with Windows and DOS Systems. Current Computer Forensics Tools: Software/ Hardware Tools.	40%	22
3.	**ANALYSIS AND VALIDATION :** Validating Forensics Data – Data Hiding Techniques – Performing Remote Acquisition – Network Forensics – Email Investigations – Cell Phone and Mobile Devices Forensics	20%	12
4.	**ETHICAL HACKING :** Introduction to Ethical Hacking – Footprinting and Reconnaissance – Scanning Networks – Enumeration – System Hacking – Malware Threats – Sniffing	15%	10
5.	**ETHICAL HACKING IN WEB :** Social Engineering – Denial of Service – Session Hijacking – Hacking Web servers – Hacking Web Applications – SQL Injection – Hacking Wireless Networks – Hacking Mobile Platforms.	5%	8

***Continuous Evaluation:**
It consists of assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Reference Books

9. Bill Nelson, Amelia Phillips, Frank Enfinger, Christopher Steuart, —Computer Forensics and Investigations, Cengage Learning, India Edition, 2016.
10. CEH official Certfied Ethical Hacking Review Guide, Wiley India Edition, 2015.
11. John R.Vacca, —Computer Forensics, Cengage Learning, 2005

12. MarjieT.Britz, —Computer Forensics and Cyber Crime: An Introduction, 3rd Edition, Prentice Hall, 2013.
13. AnkitFadia — Ethical Hacking Second Edition, Macmillan India Ltd, 2006
14. Kenneth C.Brancik —Insider Computer Fraud Auerbach Publications Taylor & Francis Group–2008.

Course Outcome:

After learning the course the students shall be able to:

1. Understand the basics of computer forensics
2. Apply a number of different computer forensic tools to a given scenario
3. Analyze and validate forensics data
4. Identify the vulnerabilities in a given network infrastructure
5. Implement real-world hacking techniques to test system security

List of Practical:

1. Understanding & implementation of the computer forensics investigation process in detail.
2. Understanding and implementation of file system and scanning of hard disk
3. Understanding & implementation of window forensics.
4. Understanding and implementation of data acquisition & duplication process
5. Understanding the process of recovering deleted files and partitioning.
6. Understanding and implementing forensics investigation using access data FTK tool kit.
7. Understanding and implementing stenography and reverse stenography in images and files.
8. Understanding and implementation of application password crackers
9. Understanding and implementation of log capturing and event correlation.
10. Understanding the process of making investigative reports.

PARUL UNIVERSITY - FACULTY OF ENGINEERING & TECHNOLOGY

DEPARTMENT OF INFORMATION TECHNOLOGY
SYLLABUS (PROPOSED) FOR 8th SEM B. TECH. PROGRAMME
INTERNET OF THINGS (03108451)
ACADEMIC YEAR 2020-21

Type of Course: INFORMATION TECHNOLOGY

Prerequisite: Good working knowledge of C, Python and Fundamentals of computer network, Wireless Communication and Internet Technology

Rationale: The explosive growth of the "Internet of Things" is changing our world. IoT components are allowing people to innovate new designs and products at home. The Internet of Things (IoT) is a course about the new paradigm of objects interacting with people, with information systems, and with other objects. The course will focus on creative thinking and on hands-on project development. The students will learn:

– IoT concepts

– IoT technologies

– Creative thinking techniques

– Co-creation techniques

The focus will be more on the possibilities offered by the different technologies, and on the creative thinking techniques to find innovative applications of combinations of such technologies in real-life scenarios.

Teaching and Examination Scheme:

Teaching Scheme (Hrs/Week)			Cr	Examination Scheme					Total
				External		Internal			
L	T	P		Theory	Practical	Theory	*C.E.	Practical	
3	0	2	4	60	30	20	20	20	150

L- Lectures; **T**- Tutorial/Teacher Guided Student Activity; **P- Practical**; **Cr**- Credit; ***C.E** – Continuous Evaluation (Presentation, Assignment, Progressive assessment etc.)

Contents:

Sr. No.	Topic	Weightage	Teaching Hrs.
1.	**Introduction to Internet of Things(IoT):** Embedded system – The core part of IoT, Application of Embedded Systems, Evolution in Computing, Machine to Machine(M2M) and IoT, What Is the Internet of Things (IoT)?, Components of IoT, Introduction to Cloud Computing, Introduction to Big data platforms for IoT, Introduction to Cloud and Fog Computing	10%	3
2.	**IoT Architecture** IoT Architecture layers, Three- and Five-Layer Architectures, Cloud and Fog Based Architectures **Breaking Down the IoT Stack:** **Devices** – Arduino, Raspberry Pi, NodeMCU(ESP8266) **Sensors & Actuators** - Buzzers, Relays, DC Motors, Stepper Motors, Servo Motors, Digital Sensors, Analog Sensors, Serial Communications with UART, Pulse width modulation, I2C, SPI	20%	8
3.	**IoT Protocol Stack**	20%	

	Zigbee, Zwave, RFID, NFC, Smart and Classic Bluetooth, Thread, CoAP, AMQP, DDS, MQTT, WiFi, LiFi , SMQTT, CoRE, 6LowPAN, 6TiSCH, RPL, CORPL, CARP		8
4.	**Hardware and Software:** **Arduino Board and C programming:** Arduino Platform, Arduino IDE, Compiling Code, Arduino Schematics, Arduino Basic Setup & Interface, Examples: Blink LED, Serial Print, ADC, pulse width modulation. **ESP8266 and Micropython/C:** ESP8266 platform, ESPlorer IDE, compiling code, Examples: Blink LED, Serial Print, ADC, pulse width modulation, Using ESP as Station, Uploading data on cloud, MQTT publish/subscribe, Communicating through android app **Raspberry Pi and Python:** About the board, Raspberry Pi Interfaces, Raspberry Pi vs. Arduino, Operating System Benefits, Raspberry Pi Setup, Introduction to Linux and Python, GPIO Access, Pulse width modulation, Blink LED, GUI using Tkinter, Network Programs, Client – server programs, Using Twitter API, Camera module, Servo control	20%	8
5.	**Case Studies:** IBM Watson, AmazonGo and SCiO. **Applications:** Efficient Waste Management in Smart Cities, A Smart Home Scenario, Shopping, Smart Healthcare systems, smart cities, IoT in industry.	15%	6
6.	**Open Challenges in IoT:** Security, Scalability in Networking, Dynamic Topologies, Mobility, Reliability, Device Diversity and Interoperability, Integration of data from multiple Sources, Energy Efficiency, Bandwidth Management, Modeling and Analysis, Interfacing, Storage and computation to handle Exponential growth of data volume from Sensors, Complexity Management	15%	6

Reference Books:

1. Internet of Things (A Hands-on-Approach) , Vijay Madisetti , Arshdeep Bahga, Universities Press
2. Designing the Internet of Things , Adrian McEwen (Author), Hakim Cassimally, Wiley
3. Internet of Things: Converging Technologies for Smart Environments and Integrated Ecosystems, Dr. Ovidiu Vermesan, Dr. Peter Friess, River Publishers
4. Interconnecting Smart Objects with IP: The Next Internet, Jean-Philippe Vasseur, Adam Dunkels, Morgan Kuffmann Publishers
5. Getting Started with the Internet of Things, Cuno Pfister, O' Reilly

Course Outcomes:
After learning the course the students shall be able to:

5. Understand the application areas of IOT
6. Realize the revolution of Internet in Mobile Devices, Cloud & Sensor Networks
7. Understand building blocks of Internet of Things and characteristics.
8. Apply and implement various communication technologies of IoT in solving real-life problems.

List of Practical:

1. Study of IoT supported Hardware platforms such as: Arduino, Raspberry pi, NodeMCU
2. Write a program to blink LEDS in ascending and descending order using Arduino/NodeMCU.
3. Write a program to print a statement on serial terminal using Arduino/NodeMCU.
4. Write a program to demonstrate the ADC process for Analog Sensing and print the value on serial terminal using Arduino/NodeMCU.
5. Write a program to use ESP module as access point and connect other device to it using WiFi.

6. Write a program to use ESP module as station and connect to a router (or access point).
7. Write a program to take analog input from ESP and pass that data to api.thingspeak.com and prepare an online graph.
8. Demonstrate simple pub/sub mechanism of MQTT protocol using ESP module.
9. Develop offline Webserver to control GPIO: Demonstrate offline webserver using HTML webpage which can be accessed from web browser and through which LED can be toggled.
10. Write a program to implement PWM using RaspberryPi.
11. Write a program to control LEDs with voice commands.
12. Write a program to implement alaram system using Motion Sensor and RaspberryPi.
13. Write a program for Setting up Python web server using Raspberry Pi.
14. Write a program to Send Tweets from Raspberry Pi.
15. Write a program to implement face detection using Raspberry Pi and OpenCV.
16. Write a program to detect presence of RFID tags within the given range using RFID reader.
17. Designing and development of a mini IoT based application using any of the IoT communication technologies.

List of Tools:

1. Arduino IDE
2. ESplorer
3. IDLE

PARUL INSTITUTE OF ENGINEERING & TECHNOLOGY – FIRST SHIFT
EIGHT SEMESTER INFORMATION TECHNOLOGY
STUDENTS HAND-BOOK-2020-21

FACULTY OF ENGG. & TECH. - PIET			**LESSON PLAN**
Academic Year : 2020-21			**Sem: 8**
Name of Teacher :			**Name of Department: IT**
Subject : Big Data Analytics (03105480)			**Hrs./Week: 4**
Sr. No.	**Name of Topic**	**Hrs. Alloted**	**Planned Date Div 1**
1	**Understanding Big Data**	7	
	Fundamental concepts of distributed computing, Understanding Big Data	1	
	Classification of Digital Data: Structured, Semi Structured & Un Structured	1	
	Evolution of Big Data, Definition of Big Data - Volume - Velocity -Variety	1	
	Challenges of Big Data, Why Big Data?	1	
	Traditional Business Intelligence (BI) versus Big Data, industry examples of big data	1	
	What is Big Data Analytics?, Data Science	1	
	Data Science	1	
2	**Basics Of Hadoop**	16	
	What is Hadoop?, Brief History of Hadoop	1	
	Why Hadoop?, RDBMS versus Hadoop	1	
	Hadoop Components	1	
	High Level Architecture of HADOOP	2	
	Key Advantages & Features of Hadoop, Data format	1	
	Hadoop distributed file system (HDFS)	2	
	Processing Data with Hadoop	1	
	Overview of Map Reduce	1	
	Map-Reduce workflows	2	
	anatomy of Map-Reduce job run	1	
	shuffle and sort	1	
	task execution	1	
	input formats , output Format	1	
3	**Nosql Data Management**	10	
	Introduction to NoSQL	1	

	Types of NoSQL, Why NoSQL?	1	
	Advantages of NoSQL	1	
	Comparison of SQL	1	
	NoSQL and NewSQL	1	
	aggregates	1	
	key-value and document data models	1	
	graph databases	1	
	map- reduce	1	
	partitioning and combining	1	
4	**Data Base for the Modern Web**	9	
	Introduction to MongoDB key features	1	
	Core Server tools	1	
	MongoDB through the JavaScript's Shell	1	
	Creating and Querying through Indexes	1	
	Document-Oriented	1	
	principles of schema design	1	
	Constructing queries on Databases	1	
	collections and Documents	1	
	MongoDB Query Language	1	
5	**Hadoop Related Tools**	8	
	Overview of HBase	1	
	Pig introduction, Pig data model	1	
	Hive, data types and file formats	1	
	HiveQL data definition, HiveQL data manipulation	1	
	HiveQL queries	1	
	Pig Latin Overview , Pig versus Hive	1	
	Using JSON	1	
	Overview of Cassandra , Jasper Reports	1	

PARUL INSTITUTE OF ENGINEERING & TECHNOLOGY – FIRST SHIFT
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STUDENTS HAND-BOOK-2020-21

Academic Year : 2020-21		**Lesson Plan**	
Name of Teachers:		**Department:IT**	
Subject: Cyber Forensic(03105481)		**Sem:8th**	
Theory/Pract : Theory		**Hours/Week : 4/1**	
Sr. No.	**Name of Topic**	**Hrs/Week**	**Planned Date**
1	**INTRODUCTION TO COMPUTER FORENSICS :**	**12**	
	Introduction to Traditional Computer Crime, Traditional problems associated with Computer Crime.	2	
	Introduction to Identity Theft & Identity Fraud.	2	
	Types of CF techniques – Incident and incident response methodology – Forensic duplication and investigation.	2	
	Preparation for IR: Creating response tool kit and IR team.	2	
	Forensics Technology and Systems	2	
	Understanding Computer Investigation – Data Acquisition.	2	
2	**EVIDENCE COLLECTION AND FORENSICS TOOLS :**	**18**	
	Processing Crime and Incident Scenes – Working with Windows	2	
	Processing Crime and Incident Scenes – Working with Windows	2	
	Processing Crime and Incident Scenes –DOS Systems.	2	
	Processing Crime and Incident Scenes – DOS Systems.	2	
	Processing Crime and Incident Scenes – Working with Windows and DOS Systems.	2	
	Current Computer Forensics Tools: Software/ Hardware Tools.	2	
	Current Computer Forensics Tools: Software/ Hardware Tools.	2	
	Current Computer Forensics Tools: Software/ Hardware Tools.	2	
	Current Computer Forensics Tools: Software/ Hardware Tools.	2	
3	**ANALYSIS AND VALIDATION :**	**10**	
	Validating Forensics Data – Data Hiding Techniques	2	
	Performing Remote Acquisition	2	
	Network Forensics	2	
	Email Investigations	2	
	Cell Phone and Mobile Devices Forensics	2	
4	**ETHICAL HACKING :**	**6**	

	Introduction to Ethical Hacking, Footprinting and Reconnaissance	2	
	Scanning Networks – Enumeration	2	
	System Hacking, Malware Threats – Sniffing	2	
5	**ETHICAL HACKING IN WEB :**	**6**	
	Social Engineering – Denial of Service – Session Hijacking – Hacking Web servers – Hacking Web Applications	2	
	SQL Injection – Hacking Wireless Networks – Hacking Mobile Platforms.	2	
	revisions(solving queries)	2	

PARUL INSTITUTE OF ENGINEERING & TECHNOLOGY – FIRST SHIFT
EIGHT SEMESTER INFORMATION TECHNOLOGY
STUDENTS HAND-BOOK-2020-21

FACULTY OF ENGG. & TECH. - PIET			**LESSON PLAN**	
Academic Year : 2020-21			**Sem: 8th**	
Name of Teacher :			**Name of Department: IT**	
Subject: Cyber Physical System (3145452)			**Hrs./Week: 3**	
Sr.No.	**Name of Topic**	**Hrs/ Allotted**	**IT1 Planned Date**	**IT2 Planned Date**
1	**Introduction to Internet of Things (IoT):**	**3**		
	Embedded system – The core part of IoT, Application of Embedded Systems, Evolution in Computing	1		
	Machine to Machine(M2M) and IoT, What Is the Internet of Things (IoT)? Components of IoT	1		
	Introduction to Cloud Computing, Introduction to Big data platforms for IoT, Introduction to Cloud and Fog Computing	1		
2	**IoT Architecture:**	**8**		
	IoT Architecture layers, Three- and Five-Layer Architectures	1		
	Cloud and Fog Based Architectures	1		
	Breaking Down the IoT Stack:	1		
	Arduino, Raspberry Pi, NodeMCU (ESP8266)	1		
	Sensors & Actuators - Buzzers, Relays, DC Motors	1		
	Stepper Motors, Servo Motors, Digital Sensors	1		
	Analog Sensors, Serial Communications with UART	1		
	Pulse width modulation, I2C, SPI	1		
3	**IoT Protocol Stack:**	**8**		
	Zigbee, Zwave	1		
	RFID, NFC, Smart and Classic Bluetooth	1		
	Thread, CoAP, AMQP	1		
	DDS, MQTT	1		
	WiFi, LiFi , SMQTT, CoRE	1		
	6LowPAN, 6TiSCH	1		

	RPL, CORPL, CARP	1		
	RPL, CORPL, CARP	1		
4	**Hardware and Software:**	**8**		
	Arduino Platform, Arduino IDE, Compiling Code	1		
	Arduino Schematics, Arduino Basic Setup & Interface	1		
	Examples: Blink LED, Serial Print, ADC, pulse width modulation.	1		
	ESP8266 platform, ESPlorer IDE, compiling code	1		
	Examples: Blink LED, Serial Print, ADC, pulse width modulation, Using ESP as Station, Uploading data on cloud, MQTT publish/subscribe, Communicating through android app	1		
	About the board, Raspberry Pi Interfaces, Raspberry Pi vs. Arduino, Operating System Benefits, Raspberry Pi Setup, Introduction to Linux and Python	1		
	GPIO Access, Pulse width modulation, Blink LED, GUI using Tkinter	1		
	Network Programs, Client – server programs, Using Twitter API, Camera module, Servo control	1		
5	**IoT Case Studies:**	**6**		
	IBM Watson, AmazonGo and SCiO.	1		
	Efficient Waste Management in Smart Cities	1		
	A Smart Home Scenario	1		
	Shopping, Smart Healthcare systems	1		
	smart cities, IoT in industry	1		
	smart cities, IoT in industry	1		
6	**Open Challenges in IoT:**	**6**		
	Security, Scalability in Networking, Dynamic Topologies,	1		
	Mobility, Reliability, Device Diversity and Interoperability	1		
	Integration of data from multiple Sources, Energy Efficiency	1		
	Bandwidth Management, Modeling and Analysis	1		

	Interfacing, Storage and computation to handle Exponential growth of data volume from Sensors	1		
	Complexity Management	1		