Vision of the Institution

To ignite the minds of the students through academic excellence so as to bring about social transformation and prosperity.

Mission of the Institution

- To expand the frontiers of knowledge through Quality Education.
- To provide valued added Research and Development.
- To embody a spirit of excellence in Teaching, Creativity, Scholarship and Outreach.
- To provide a platform for synergy of Academy, Industry and Community.
- To inculcate high standards of Ethical and Professional Behavior.

Vision of IT Department

To be leaders in Information Technology through excellence in education, research and community outreach.

Mission of IT Department

- To provide quality education in the core principles of Information Technology.
- To enable the students to apply the core concepts to solve real world problems.
- To amplify their potential through research and continuous learning for high quality career.
- To mould them as professionals with ethics and morals.

Program Educational Objectives(PEOs)

PEO1: To provide students with a strong foundation in the mathematical, scientific and engineering fundamentals necessary to formulate, solve and analyze engineering problems.

PEO2: Graduates will succeed in entry-level engineering positions in IT industry and with government agencies.

PEO3: Graduates will succeed in the pursuit of advanced degrees in engineering or other fields and will have skills for, continued independent, lifelong learning to become experts in their profession.

PEO4: Empower students with effective teamwork, communication skills, leadership skills, ethical values and high integrity to serve the interests of the society and nation.

Program Outcomes(POs) of IT Department

Engineering Graduates will be able to:

1. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Specific Outcomes (PSOs) of IT Department

1. An ability to demonstrate basic knowledge in databases, programming languages, common business functions and algorithm analysis to design and develop appropriate Information Technology solutions.
2. Ability to organize an IT Infrastructure, manage and monitor resources and secure the data.

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DEPARTMENT OF INFORMATION TECHNOLOGY

Course Structure for B. Tech. (With effect from 2019-2020)

S.No	Subjects	L	T	P	C	I	E
II YEAR II SEMESTER								
1	Internet of Things (IOT)	3	-	-	3	40	60
2	E Commerce	3	-	-	3	40	60
3	Database Management Systems	3	-	-	3	40	60
4	Formal Language Automata Theory	3	-	-	3	40	60
5	Computer Organization and Architecture	3	-	-	3	40	60
6	Logical Reasoning	3	-	-	0	0	0
7	Socially Relevant Project (15 Hrs/Sem)	-	-	1	0.5	20	30
8	Business English Communication Lab	-	-	3	1.5	40	60
9	Design Thinking & Product Innovation Lab	-	-	3	1.5	40	60
10	Database Management Systems Lab	-	-	3	1.5	40	60
11	Internet of Things Lab	-	-	3	1.5	40	60
	Total	**18**	**0**	**13**	**21.5**	**380**	**570**
						\multicolumn **950**	

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II YEAR II SEMISTER
INFORMATION TECHNOLOGY
R19 SYLLABUS

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Course Structure for B. Tech. (With effect from 2019-2020)

Year/Semester	II B. Tech/II Sem	L	T	P	C
Regulation Year	2020-21	3	0	0	3
Subject	Internet Of Things				

COURSE OBJECTIVES:

1. To understand the fundamentals of the Internet of Things and to know the physical design ,logical design and various IoT level models.

2. To teach a student how to design IoT applications and to know the various communication models and protocols.

3. To understand the fundamentals of 8051 Microcontroller and various IoT Platforms.

4. To build a real time IoT application and deploy using Arduino,NodeMCU8266 and Raspberry Pi.

5. To understand various Cloud Computing platforms and Big Data analytics applied in IoT.

UNIT-I :

Introduction to IoT : Introduction to IoT-Characteristics-Physical design - Protocols – Logical design – Enabling technologies – IoT Levels – Domain Specific IoTs.

UNIT-II:

IoT Design and Wireless Communication Protocols : IoT Design Methodology , IoT Components, IoT Design Methodology using home automation and Weather monitoring, Wireless Communication Protocols : 6LoWPAN, Zigbee, WIFI, , Bluetooth and BLE ,LPWANs,Cellular 4G,5G,RFID, Lifi,Widi.

UNIT-III:

8051 Microcontroller and IoT Development Boards : Introduction to Microcontrollers, the 8051 Instruction Set, AT89S8253 Microcontroller, Assembly Language, IoT Development Boards - NodeMCU, ESP8266, Arduino, Intel Galileo and Raspberry Pi.

UNIT-IV:

IoT Protocols : MQTT, UDP, MQTT brokers, publish subscribe modes, HTTP, COAP,XMPP and gateway protocols, IEEE 802.15.4 protocols.

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UNIT-V:

Building IoT Applications with Raspberry Pi : Building IoT with RASPBERRY PI- IoT Physical Devices & Endpoints - IoT Device -Building blocks -Raspberry Pi -Board - Linux on Raspberry Pi - Raspberry Pi Interfaces -Programming Raspberry Pi with Python, Introduction to NodeMCU, Arduino and working example.

UNIT-VI:

IoT Platforms, Cloud and Big Data in IoT : Introduction to Cloud computing : Cloud Computing, clouds types and their features, Open Source IoT Platforms, AWS cloud for IoT, ThingSpeak, Python Web Application Framework, Django, AWS web services for IoT.

Introduction to Big Data Analytics : Introduction Big Data, Apache Hadoop framework , Apache Spark and Python Web Application Framework, Django, Data Analytics.

Challenges in IoT and future directions.

COURSE OUTCOMES:

1. Describe IoT basics, different IoT levels and IoT application domains.
2. Describe IoT design methodology and wireless communication protocols.
3. Describe microcontrollers and identify different IoT development boards.
4. Describe application layer and gateway protocols.
5. Describe and use Raspberry Pi to interface with sensors and actuators by writing programs.
6. Gain experience on using IoT with cloud, big data and describe IoT challenges.

TEXT BOOKS:

1. Internet of Things – A hands-on approach, Arshdeep Bahga, Vijay Madisetti, Universities Press, 2015 .

2. IoT Fundamentals: Networking Technologies, Protocols and Use Cases for Internet of Things, David Hanes, Gonzalo Salgueiro, Patrick Grossetete, Rob Barton and Jerome Henry, Cisco Press, 2017

3. Enabling things to talk – Designing IoT solutions with the IoT Architecture Reference Model, Alessandro Bassi, Martin Bauer, Martin Fiedler, Thorsten Kramp, Rob van Kranenburg, Sebastian Lange, Stefan Meissner, Springer

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Course Structure for B. Tech. (With effect from 2019-2020)

Year/Semester	II B. Tech/II Sem	L	T	P	C
Regulation Year	2020-21	3	0	0	3
Subject	E-COMMERCE				

COURSE OBJECTIVES:

1. Identify the major categories and trends of e-commerce applications.

2. Identify the essential processes of an e-commerce system.

3. Identify several factors and web store requirements needed to succeed in e-commerce.

4. Discuss the benefits and trade-offs of various e-commerce clicks and bricks alternatives.

5. Understand the main technologies behind e-commerce systems and how these technologies interact.

6. Discuss the various marketing strategies for an online business.

7. Define various electronic payment types and associated security risks and the ways to protect against them.

UNIT–I

Electronic Commerce-Frame work, anatomy of E-Commerce applications, E-Commerce Consumer applications, E-Commerce organization applications. Consumer Oriented Electronic commerce - Mercantile Process models.

UNIT–II

Electronic Payment Systems – Types of Electronic Payment Systems, Risks in Electronic Payment systems. Inter Organizational Commerce - EDI, EDI Software Implementation.

UNIT- III

Intra Organizational Commerce - Work Flow Automation and Co-ordination, Customization and Internal Commerce, Supply chain Management.

UNIT–IV

Corporate Digital Library - Document Library, Digital Document types, Corporate Data Warehouses. Advertising and Marketing - Information based marketing, Advertising on Internet, On-line marketing process, Market research.

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UNIT–V

Consumer Search and Resource Discovery - Information search and Retrieval, Commerce Catalogues, Information Filtering.

UNIT – VI

Multimedia - key multimedia concepts, Digital Video and Electronic Commerce, Desktop video processing, Desktop Video Conferencing.

COURSE OUTCOMES:

1. Understand the basic concepts and technologies used in the field of E-Commerce
2. Compare and Contrast various Electronic Payment systems and understand the working of EDI
3. Understand the basic concepts of Intra Organizational commerce.
4. Apply theories and principles of corporate digital library and identify the strategies of advertising
5. To effectively understand the process of information search and retrieval.
6. Understand the basic concepts and technologies of multimedia concepts.

TEXT BOOK:

    1. Frontiers of electronic commerce – Kalakata, Whinston, Pearson.

REFERENCE BOOKS:

  1. E-Commerce fundamentals and applications Hendry Chan, Raymond Lee,

Tharam Dillon, Ellizabeth Chang, John Wiley.

  2. E-Commerce, S.Jaiswal – Galgotia.

  3. E-Commerce, Efrain Turbon, Jae Lee, David King, H.Michael Chang.

  4. Electronic Commerce – Gary P.Schneider – Thomson.

  5. E-Commerce – Business, Technology, Society, Kenneth C.Taudon, Carol

Guyerico Traver.

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Course Structure for B. Tech. (With effect from 2019-2020)

Year/Semester	II B. Tech/II Sem	L	T	P	C
Regulation Year	2020-21	3	0	0	3
Subject	Database Management System				

COURSE OBJECTIVES:

1. Understand the basic concepts and the applications of database systems.

2. Master the basics of SQL and construct queries using SQL.

3. Understand the relational database design principles.

4. Familiar with the basic issues of transaction processing and concurrency control.

5. Familiar with database storage structures and access techniques.

UNIT- I

An Overview of Database Management : Data base System Applications, data base System VS file System – View of Data – Data Abstraction –Instances and Schemas –data base Users and Administrator -- Data Independence -- data Models – Database Languages

Database system architecture, Introduction- The Three Levels of Architecture-The External Level- the Conceptual Level- the Internal Level- Mapping-The Database Management Systems-Client/Server Architecture.

UNIT-II

The E/R Models, The Relational Model, Relational Calculus, Introduction to Database Design, Database Design and Er Diagrams-Entities Attributes, and Entity Sets-Relationship and Relationship Sets-Conceptual Design With the Er Models, The Relational Model Integrity Constraints Over Relations- Key Constraints –Foreign Key Constraints-General Constraints, Relational Algebra and Calculus, Relational Algebra- Selection and Projection- Set Operation, Renaming – Joins- Division- More Examples of Queries, Relational Calculus, Tuple Relational Calculus- Domain Relational Calculus.

UNIT-III

Queries, Constraints, Triggers: The Form of Basic SQL Query, Union, Intersect, and Except, Nested Queries, Aggregate Operators, Null Values, Complex Integrity Constraints in SQL, Triggers and Active Database.

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UNIT-IV

Schema Refinement (Normalization) : Purpose of Normalization or schema refinement, concept of functional dependency, normal forms based on functional dependency(1NF, 2NF and 3 NF), concept of surrogate key, Boyce-codd normal form(BCNF), Lossless join and dependency preserving decomposition, Fourth normal form(4NF).

UNIT-V

Transaction Management and Concurrency Control: Transaction, properties of transactions, transaction log, and transaction management with SQL using commit rollback and savepoint. Concurrency control for lost updates, uncommitted data, inconsistent retrievals and the Scheduler. Concurrency control with locking methods : lock granularity, lock types, two phase locking for ensuring serializability, deadlocks, Concurrency control with time stamp ordering : Wait/Die and Wound/Wait Schemes, Database Recovery management : Transaction recovery.

UNIT-VI

Overview of Storages and Indexing, Data on External Storage- File Organization and Indexing – Clustered Indexing – Primary and Secondary Indexes, Index Data Structures, Hash-Based Indexing – Tree-Based Indexing, Comparison of File Organization.

COURSE OUTCOMES:

1. Design and implement a database schema for a given problem-domain
2. Normalize a database
3. Populate and query a database using SQL DML/DDL commands.
4. Declare and enforce integrity constraints on a database using a state-of-the-art RDBMS
5. Programming PL/SQL including stored procedures, stored functions, cursors, packages.

TEXT BOOKS:

1. Data base Management Systems, Raghurama Krishnan, Johannes Gehrke, TATA McGraw Hill 3rd Edition
2. Database Systems - The Complete Book, H G Molina, J D Ullman, J Widom Pearson

REFERENCES BOOKS:

1. Data base Systems design, Implementation, and Management, Peter Rob & Carlos Coronel 7th Edition.

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Course Structure for B. Tech. (With effect from 2019-2020)

Year/Semester	II B. Tech/II Sem	L	T	P	C
Regulation Year	2020-21	3	0	0	3
Subject	**Formal Languages and Automata Theory**				

COURSE OBJECTIVES:

1. To classify machines by their power to recognize languages.

2. Employ finite state machines to solve problems in computing.

3. Explain deterministic and non-deterministic machines.

4. Comprehend the hierarchy of problems arising in the computer sciences.

UNIT-I:

Why Study Automata Theory?, Automation Computation, Finite State Machine, Components of Finite State Automata, Elements of Finite State System, Mathematical representation of Finite State Automata, Automata Classification, Automat in real world.

Formal Languages Theory: Symbols, Alphabets and Strings, Operations on Strings, Formal Languages, Operations on Languages.

UNIT-II:

Finite Automata: Transition Systems, Acceptance of a String by a Finite Automation, DFA, Design of DFAs, NFA, Design of NFA, Equivalence of DFA and NFA, Conversion of NFA into DFA, Finite Automata with E-Transition, Minimization of Finite Automata, Mealy and Moore Machines, Applications and Limitation of Finite Automata.

UNIT-III:

Regular Expressions: Regular Expressions, Regular Sets, Identity Rules, Equivalence of two Regular Expressions, Manipulations of Regular Expressions, Finite Automata, and Regular Expressions, Inter Conversion, Equivalence between Finite Automata and Regular Expressions, Pumping Lemma, Closers Properties, Applications of Regular Expressions, Finite Automata and Regular Grammars, Regular Expressions and Regular Grammars.

UNIT-IV:

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Context Free Grammars: Grammars, Classification of Grammars, Chomsky Hierarchy Theorem, Context Free Grammar, Leftmost and Rightmost Derivations, Parse Trees, Ambiguous Grammars, Simplification of Context Free Grammars-Elimination of Useless Symbols, E-Productions and Unit Productions, Normal Forms for Context Free Grammars-Chomsky Normal Form and Greibach Normal Form, Pumping Lemma, Closure Properties, Applications of Context Free Grammars.

UNIT-V:

Pushdown Automata: Pushdown Automata, Definition, Model, Graphical Notation, Instantaneous Description Language Acceptance of pushdown Automata, Design of Pushdown Automata, Deterministic and Non – Deterministic Pushdown Automata, Equivalence of Pushdown Automata and Context Free Grammars Conversion, Application of Pushdown Automata.

UNIT-VI:

Turing Machine: Turing Machine, Definition, Model, Representation of Turing Machines-Instantaneous Descriptions, Transition Tables and Transition Diagrams, Language of a Turing Machine, Design of Turing Machines, Techniques for Turing Machine Construction, Types of Turing Machines, Church's Thesis, Universal Turing Machine, Restricted Turing Machine.

COURSE OUTCOMES:

1. Understanding basic kinds of finite automata and their capabilities.

2. Understanding regular and context-free languages.

3. Ability to describe and transform regular expressions and grammars.

4. Learn about context free grammars and push down automata.

5. Gain insight on types of Turing machines, models, computable Functions.

6. Learn about computability theory.

TEXT BOOKS:

1. Introduction to Automata Theory, Languages and Computation, J.E.Hopcroft, R.Motwani and J.D.Ullman, 3rd Edition, Pearson, 2008.
2. Theory of Computer Science-Automata, Languages and Computation, K.L.P.Mishra and N.Chandrasekaran, 3rd Edition, PHI, 2007.

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REFERENCE BOOKS:

1. Formal Language and Automata Theory, K.V.N.Sunitha and N.Kalyani, Pearson, 2015.

2. Introduction to Automata Theory, Formal Languages and Computation, Shyamalendu Kandar, Pearson, 2013.

3. Theory of Computation, V.Kulkarni, Oxford University Press, 2013.

4. Theory of Automata, Languages and Computation, Rajendra Kumar, McGraw Hill, 2014.

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Course Structure for B. Tech. (With effect from 2019-2020)

Year/Semester	II B. Tech/II Sem	L	T	P	C
Regulation Year	2020-21	3	0	0	3
Subject	Computer Organization and Architecture				

COURSE OBJECTIVES:

1. To understand the structure, function, and characteristics of computer systems.
2. To understand the design of the various functional units and components of computers.
3. To identify the elements of modern instruction sets and their impact on processor design.
4. To explain the function of each element of a memory hierarchy.
5. To identify and compare different methods for computer I/O.
6. To Understand computer arithmetic formulate and solve problems, understand the performance requirements of systems
7. To understand the structure of the multiprocessor system

UNIT-I

Basic Structure Of Computers : Computer Types, Functional unit, Basic Operational concepts, Bus structures, Data Representation: complements, Fixed Point Representation. Floating – Point Representation, Error Detection codes.

UNIT-II

Register Transfer Language And Microoperations: Register Transfer language, Bus and memory transfers, Binary adder, Binary adder-subtractor,Arithmetic circuit, logic micro operations, shift micro operations, Arithmetic logic shift unit.

UNI- III

Type of instructions : Data transfer instructions, Arithmetic and Logic instructions,shift and rotate instructions,Branch instructions Stack organization. Instruction formats. Addressing modes.
Computer Arithmetic: Addition,subtraction, Multiplication algorithm, Division algorithm.

UNIT- IV

The Memory Systems : Memory Hierarchy, Main memory, Read Only Memory: ROM,PROM,EPROM,EEPROM,Flash memory, Cache Memory: Mapping techniques, Virtual Memory.

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Secondary storage: Auxiliary memory(Magnetic Hard Disks,Optical Disks)

UNIT-V

Input-Output Organization : Peripheral Devices, Input-Output Interface, Asynchronous data transfer:Source initiated data transfer,Destination initiated data transfer,Priority Interrupts : Daisy-chaining interrupt, Parallel priority Interrupt Direct memory Access(DMA).
Design of Control Unit :Hardwired control, Micro programmed control methods.

UNIT-VI

Multi Processors : Introduction, Characteristics of Multiprocessors, Interconnection Structures:(i)Time-shared common bus,(ii)Multi port memory,(iii)8 X 8 Omega switching network ,(iv)Hypercube interconnection, Inter processor Arbitration:Serial and Parallel Arbitration

COURSE OUTCOMES:

1. Students can understand the architecture of modern computer.
2. They can analyze the Performance of a computer using performance equation Understanding of different instruction types.
3. Students can calculate the effective address of an operand by addressing modes.
4. They can understand how computer stores positive and negative numbers.
5. Understanding of how a computer performs arithmetic operation of positive and negative numbers.

TEXT BOOKS

T1. Computer system architecture, M. Morris Mano, 3 rd edition, pearson/phi

T2. Computer organization , carl hamacher, zvonks vranesic, safeazaky, 5 th edition, mcgraw hill.

T3. Computer architecture a quantitative approach, john l. hennessy and david a. patterson, fourth edition elsevier

REFERENCES

1. Computer organization and architecture – william stallings sixth edition, pearson/phi
2. Structured computer organization – andrew s. tanenbaum, 4th edition phi/pearson

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3. Fundamentals or computer organization and design, - sivaraama dandamudi springer int. edition

Year/Semester	II B. Tech/II Sem	L	T	P	C
Regulation Year	2020-21	3	0	0	0
Subject	Logical Reasoning				

COURSE OBJECTIVES:

1. Be familiar with different relations in a family, concepts of clocks and calendars.
2. Find position and order of a person /object , routes between points.
3. Understand the techniques of coding and decoding.
4. Understand the validity of statements and inferences from them.
5. Draw valid conclusions from given statements.
6. Understand the concept of analogy and properties of dice.

UNIT-I:

Blood Relations, Directions, Clocks & Calendars.: Blood relations -family tree, types of problems on blood relations- first person narrating type-coded relation-puzzle relation, direction-distance-direction and distance problems, angle between hands -correct or incorrect time, day of a date-repeated calendars.

UNIT-II:

Ranks & Position, Puzzles: Ranks-based on positions ,counting ,comparisons , puzzles-table based, selection based, seating based, graph and network Based .

UNIT-III:

Coding & Decoding, Series.: Coding and decoding-letter coding, number coding, symbol coding, substitution and mixed type, Symbols and notations, series-number, letter and word type , missing term.

UNIT-IV:

Critical Reasoning-I:Syllogisms, logical consistency, inference & degree of truth, assertion & reason.

UNIT-V:

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Critical Reasoning-II: Statement & assumption, statement &conclusion, cause& effect, decision making.

UNIT-VI:

Non Verbal Reasoning: Series, odd-man out, analogies, mirror & water images, paper cutting & folding, figure formation, cubes &dice .

COURSE OUTCOMES:

After completing this course, the students will be able to

1. Identify the relation between given persons, find the direction and distance from starting point, find angle between hands at given time and vice-versa, find day of given date and vice-versa.
2. Find the position and rank of a person/object in an arrangement, arranging in order using given data.
3. Decode the given code pattern and code given word in terms of alphabet, numbers, symbols and mixed, identify missing term in the pattern/series.
4. Draw a valid conclusion from the statements, consistency of inference drawn, valid reason from given assertions.
5. Identify the cause for the assumed effect, take decision logically from the given data.
6. Identify the odd one in the given series/group, number opposite any face of dice, figure completion from a folded figure.

TEXT BOOKS:

1. Dr. R.S. Aggarwal ,A Modern Approach to Verbal & Non-Verbal Reasoning Sultan Chand Publications, 2018.

REFERENCES:

1. B.S.Sijwali and Indu Sijwali, A New Approach to Reasoning Verbal & Non-Verbal, Arihant Publishers, 2016.
2. M.K. Pandey, Analytical Reasoning , Bsc Publishing Co. Pvt. Ltd 2009.

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Year/Semester	II B. Tech/II Sem	L	T	P	C
Regulation Year	2020-21	0	0	3	1.5
Subject	**Business Communication Lab**				

COURSE OBJECTIVES:

1. To expose student to different situations for better communication

2. To inculcate the habit of learning vocabulary for effective communication

3. To enable students to acquire Business English communication

COURSE OUTCOMES:

Upon the completion of the course, the student will be able to:

1. Understand and interpret conversations in informal and formal contexts.

2. Exhibit one's vocabulary, body language, pronunciation and intonation with proper etiquette.

3. Critique various written texts.

4. Construct appropriate Business English writing skills.

5. Develop skit exhibiting all LSRW skills.

6. Develop the skill of note making.

UNIT- I:

Listening: Listening to short conversations or monologues

Speaking: Giving information about oneself and   their opinions and Giving a short talk on business related topics

Reading: Reading short and simple texts to understand the central idea/theme.

Writing: Writing a piece of internal business communication of 30-40 words (Email)

UNIT-II:

Listening : Listening to a conversation/ monologue and taking notes

Speaking : Giving short talk on business related topics.

Reading: Matching descriptions of people to short texts. Matching statements to information given in a graph or graphs.

Writing   :   Writing a piece of internal business communication of 30-40 words (Message)

UNIT-III :

Listening: Listening to longer conversations/interviews.

Speaking: Debates & Extempore

Reading : Reading a longer text and deciding whether the statements about

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the text are right or wrong or if the information is not given.

Writing : Write a business letter 60-80 words, based on an input text and some
            notes.

UNIT-IV :

Listening: Listening to TV news channels and taking notes.

            Listening to songs and writing down the lyrics.

Speaking: Interview sessions

Reading: Read a longer text and answering questions. .

Writing: Writing a Business Report

UNIT-V:

Listening: Watching short documentaries and making notes.(General)

Speaking: Short plays, Presentations.

Reading : Read short texts and fill in a form using information from the texts.

Writing : Write a skit and enact.

UNIT-VI:

Listening: Watching documentaries and making notes.(Business specific)

Speaking: Nail your point.

Reading : Critical Reading to know author's perspective.

Writing : Write a skit and enact.

REFERENCE BOOKS:

1.   Cambridge English – Business English Certificate Preliminary

2.   Suresh Kumar. E. & Sreehari P.A (2007), Handbook for English Language
       Laboratories,

3.   Cambridge University Press India Pvt. Ltd, New Delhi.

4.   Mandal S. K (2006),Effective Communication & Public Speaking , Jaico
       Publishing House, New Delhi.

5.   Grant Taylor (2004), English Conversation Practice, Tata McGraw Hill, New
       Delhi.

6.   Balasubramanian .T (2000), A text book of English Phonetics for Indian
       Student,MacMillan Publishers, India.

7.   Kamalesh Sadanand, Susheela Punitha (2008), Spoken English: A foundation
       Course: Parts 1& 2, New Delhi, Orient Longman Pvt. Ltd

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Year/Semester	II B. Tech/II Sem	L	T	P	C
Regulation Year	2020-21	0	0	3	1.5
Subject	Design Thinking & Product Innovation Lab				

COURSE OBJECTIVES:

1. To provide the basic concepts and techniques of engineering and reverse engineering, process of design, analytical thinking and ideas, basics and development of engineering drawing, application of engineering drawing with computer aide.

2. To get exposure of exhibiting their creativity in terms of an innovative product development in a structured process through this course.

COURSE OUTCOMES:

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

1. Gather deep insights of design thinking and appreciate various design process procedure.

2. Develop design ideas through different technique and Analyse innovative product design.

3. Identify the significance of reverse Engineering to understand products.

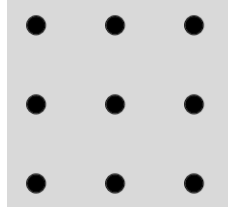4. Draw technical drawing for design ideas.

List of Experiments

1. List specific inventions that were (or might have been) suggested to creative thinkers by the following natural phenomena:

    i. human arms

    ii. cats

    iii. seagulls

    iv. a frozen salmon

    v. spiders

    vi. earthworms

    vii. a flower

    viii. the eye of a fly

    ix. conical shells

    x. animal bone structures

    xi. dew drops on leaves

    xii. human skulls

    xiii. bamboo

    xiv. human foot

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    xv. human lungs

   xvi. larynx

2. On a spare piece of paper draw a square of nine dots like this:

    Now see if you can connect up the dots with four consecutive straight lines, that is, without taking your pencil off the paper. You have one minute to complete the task.

3. Diagram a process for planning and cooking a family dinner. Does your process resemble the generic product development process? Is cooking dinner is analogous into a market-pull, technology push, platform process-intensive, customization, high-risk, quick-build, or complex system process?

4. Sketch the organization (in some appropriate graphical representation) of a consulting firm that develops new products for clients on a project by project basis. Assume that the individuals in the firm represent all of the different functions required to develop a new product. Would this organization most likely to be aligned with functions, be aligned by projects, or be a hybrid?

5. Create a product technology road-map illustrating the availability of technologies for a class of products you understand well, such as personal computers?

6. How can the concept selection methods be used to benchmark or evaluate existing products? Perform such an evaluation for five automobiles you might consider purchasing.

7. Perform concept screening for the four pencil holder concepts shown below. Assume the pencil holders are for a member of a product development team who is continually moving from site to site.

8. Draw the polygon using Auto CAD

9. Create a 2D view of the given diagram using Auto CAD

10. Create a 2D view of the given diagram using Auto CAD

11. Create a 2D view of the given diagram using Auto CAD

12. Create a 3D view of the given diagram using Auto CAD

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Year/Semester	II B. Tech/II Sem	L	T	P	C
Regulation Year	2020-21	0	0	3	1.5
Subject	Data Base Management System Lab				

COURSE OBJECTIVES:

1. To explain basic database concepts, applications, data models, schemas and instances.
2. To demonstrate the use of constraints and relational algebra operations. IV. Describe the basics of SQL and construct queries using SQL.
3. To emphasize the importance of normalization in databases.
4. To facilitate students in Database design
5. To familiarize issues of concurrency control and transaction management.

COURSE OUTCOMES:

At the end of the course the students are able to:

1. Apply the basic concepts of Database Systems and Applications.
2. Use the basics of SQL and construct queries using SQL in database creation and Interaction.
3. Design a commercial relational database system (Oracle, MySQL) by writing SQL using the system.
4. Analyze and Select storage and recovery techniques of database system.

SQL-Experiments:

1. Queries to Retrieve and Change Data: Select, Insert, Delete, and Update
2. Creation, altering and droping of tables and inserting rows into a table (use constraints while creating tables) examples using SELECT command.
3. Queries using Group By, Order By, and Having Clauses.
4. Queries using operators in SQL
5. Queries on Controlling Data: Commit, Rollback, and Save point
6. Queries (along with sub Queries) using ANY, ALL, IN, EXISTS, NOTEXISTS, UNION, INTERSET, EXCEPT, CONSTAINTS etc.
7. Queries using Aggregate functions (COUNT, SUM, AVG, MAX and MIN), and Creation and dropping of Views.
8. Queries on Joins and Correlated Sub-Queries.

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9. Practicing on Triggers - creation of trigger, Insertion using trigger, Deletion using trigger, Updating using trigger

PL/SQL

10. Write a PL/SQL Code using Basic Variable, Anchored Declarations, and Usage of Assignment Operation

11. Write a PL/SQL Code Bind and Substitution Variables. Printing in PL/SQL

12. Write a PL/SQL block using SQL and Control Structures in PL/SQL

13. Write a PL/SQL Code using Cursors, Exceptions and Composite Data Types

14. Write a PL/SQL Code using Procedures, Functions, and Packages FORMS

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Course Structure for B. Tech. (With effect from 2019-2020)

Year/Semester	II B. Tech/II Sem	L	T	P	C
Regulation Year	2020-21	0	0	3	1.5
Subject	Internet Of Things (IOT) Lab				

Note: Below experiments need to be done with NodeMCU or Arduino orRaspberryPi

List of experiments:

1. Digital Input/output

2. Analog Input/output

3. Using IR Sensor to detect objects.

4. Using LDR

5. PWM application to control LED Brightness

6. Create a localhost server

7. Use NodeMCU to upload free data from Environmental Sensors to Cloud Server

8. Automatically Tweet Sensor Data on Twitter

9. Control Home devices from self-hosted webpage on Amazon AWS

10. Controlling Home Appliance using Google Assistant

11. Calculating Distance using Ultrasonic Sensor

12. Fetching Humidity and Temperature using DHT 11 Sensor
    (Using ThingSpeak, Adafruit and Blynk IoT Platforms)

Project: Home Automation Project

Case Study:

1. Lighting as a service

2. Intelligent Traffic systems

3. Smart Parking

4. Smart water management