

RAJARAJESWARI COLLEGE OF ENGINEERING

#14, Ramoholli Cross, Kumbalagodu, Bengaluru-560074.

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Subject: Data Structures and its Applications

Sem: III

	Link 1	Link 2	Link3
Module1: Data Structures, Review of Arrays, Structures and Unions. Pointer.	https://www.youtube.com/watch?v=VVZTVHuVSqw	https://www.youtube.com/watch?v=V555j2ga93U	https://www.youtube.com/watch?v=MIL2BK02X8A
Traversing, inserting, deleting, searching, and sorting. Multidimensional Arrays, Polynomials and Sparse Matrices.	https://www.youtube.com/watch?v=7__K6Y7SCzQ	https://www.youtube.com/watch?v=39RCsMbiseq	https://www.youtube.com/watch?v=IaQoX67tvOY
Module2: Definition, Stack Operations, Array Representation of Stacks, Polish notation, Infix to postfix conversion, evaluation of postfix expression.	https://www.youtube.com/watch?v=9Jry5dF4p_o	https://www.youtube.com/watch?v=kb0y6nqbCZ4	https://www.youtube.com/watch?v=UjoYsYWfNS4
Definition, Array Representation, Queue Operations, Circular Queues, Circular queues using Dynamic arrays, Dequeues, Priority Queues,	https://www.youtube.com/watch?v=0oPpgcGpHh8	https://www.youtube.com/watch?v=1Ju69th2ocE	https://www.youtube.com/watch?v=38z66j9o7jA
Module3: Definition, Representation of linked lists in Memory, Memory allocation; Garbage Collection. Linked list operations: Traversing, Searching, Insertion, and Deletion. Doubly Linked lists, Circular linked lists, and header linked lists. Linked Stacks and	https://www.geeksforgeeks.org/applications-of-linked-list-data-structure/	https://www.geeksforgeeks.org/type-s-of-linked-list/	https://runestone.academy/ns/books/published/javajavajava/the-linked-list-data-structure.html

Queues. Applications of Linked lists – Polynomials, Sparse matrix representation			
Module 4: Terminology, Binary Trees, Properties of Binary trees, Array and linked Representation of Binary Trees, Binary Tree Traversals - Inorder, postorder, preorder; Additional Binary tree operations. Threaded binary trees, Binary Search Trees – Definition, Insertion, Deletion, Traversal, Searching, Application of Trees-Evaluation of Expression	https://www.youtube.com/watch?v=utm_source=chatgpt.com	https://www.youtube.com/watch?v=W6aZKAJcNJA	https://www.youtube.com/watch?v=2tpcqDmvJBU
Module5: Trees 2: AVL tree, Red-black tree, Splay tree, B-tree.	https://www.youtube.com/watch?v=yAFLICZFJy0	https://www.youtube.com/watch?v=3RQtq7PDHog	https://www.youtube.com/watch?v=dovkFz0vOHE
Graphs: Definitions, Terminologies, Matrix and Adjacency List Representation of Graphs, Traversal methods: Breadth First Search and Depth FirstSearch.	https://www.youtube.com/watch?v=8Bh2F3rnn8Q	https://www.youtube.com/watch?v=9C2cpQZVRBA	https://www.youtube.com/watch?v=pcKY4hjDrxk
Hashing: Hash Table organizations, Hashing Functions, Static and Dynamic Hashing.	https://www.youtube.com/watch?v=shs0KM3wKv8	https://www.youtube.com/watch?v=0M_kIqhwbFo	https://www.youtube.com/watch?v=5YgGzA2n9zI

RAJARAJESWARI COLLEGE OF ENGINEERING

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Subject: Analog and Digital Electronics

Sem:III

	Link 1	Link 2	Link 3
Module1:BJT Biasing: Fixed bias, Operational Amplifier Application Circuits Regulated Power Supply Parameters, adjustable voltage regulator, D to A and A to D converter.	https://www.youtube.com/watch?v=1b13GP8m1vE	https://www.youtube.com/watch?v=D2HIo973r8M	https://www.youtube.com/watch?v=SNopBZPJ59Q
Module 2: Karnaugh maps:two and three variable Karnaugh maps, four variable Karnaugh maps, Quine-McClusky Method, Petricks method,	https://www.youtube.com/watch?v=RO5alU6PpSU	https://www.youtube.com/watch?v=G9_oICLaLBU	https://www.youtube.com/watch?v=LcfAwyrNuHU
Module3: Combinational circuit design and simulation using gates, Multiplexers, Decoders and Programmable Logic Devices	https://www.youtube.com/watch?v=yNQMeUSaI_U	https://www.youtube.com/watch?v=ZwTwjB6_OMU	https://www.youtube.com/watch?v=QKJj25FCH1M

Module 4:Introduction to VHDL: Latches and Flip-Flops	https://www.youtube.com/watch?v=6gTEUcCk_vk	https://www.youtube.com/watch?v=6Mjn2q7vl6U	https://www.youtube.com/watch?v=5vUGMm4GiHc
Module 5: Registers and Counters: Registers and Register Transfers, Parallel Adder with accumulator, shift registers, design of Binary counters, counters for other sequences, counter design using SR and J K Flip Flops.	https://www.youtube.com/watch?v=8UKdtiruQWE	https://www.youtube.com/watch?v=t5rcjyoABTw	https://www.youtube.com/watch?v=teUiDQH-U3Y

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Subject: MicroControllers

Sem:IV

	Link1	Link2	Link3
Module1:Microprocessors versus Microcontrollers, ARM Embedded Systems, ARM Processor Fundamentals:	https://www.youtube.com/watch?v=4znY69EtGos	https://www.youtube.com/watch?v=4znY69EtGos	https://www.youtube.com/watch?v=4znY69EtGos
Module2:Introduction to the ARM Instruction Set,C Compilers and Optimization	https://www.youtube.com/watch?v=4x7d24tOCjA	https://www.youtube.com/watch?v=4x7d24tOCjA	https://www.youtube.com/watch?v=4x7d24tOCjA
Module3: C Compilers and Optimization, ARM programming using Assembly language	https://www.youtube.com/watch?v=4x7d24tOCjA	https://www.youtube.com/watch?v=C_uMDjdNZjU	https://www.youtube.com/watch?v=C_uMDjdNZjU
Module 4: Embedded System Components.	https://www.youtube.com/watch?v=9NOj6F2j8ps	https://www.youtube.com/watch?v=PaXcjDC40nE	https://www.youtube.com/watch?v=vJrv99hPNSw
Module 5: RTOS and IDE for Embedded System Design	https://www.youtube.com/watch?v=26QPDBe-NB8	https://www.youtube.com/watch?v=26QPDBe-NB8	https://www.youtube.com/watch?v=26QPDBe-NB8

RAJARAJESWARI COLLEGE OF ENGINEERING

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Subject: Computer Networks

Sem:V

	Link1	Link2	Link3
Module 1:Introduction to networks: Network hardware, Network software, Reference models,Physical Layer: Guided transmission media, Wireless transmission	https://www.youtube.com/watch?v=26QPDBe-NB8	https://www.youtube.com/watch?v=26QPDBe-NB8	https://www.youtube.com/watch?v=26QPDBe-NB8
Module 2:The Data link layer: Design issues of DLL, Error detection and correction, Elementary data link protocols, Sliding window protocols.The medium access control sublayer:The channel allocation problem, Multiple access protocols.	https://www.youtube.com/watch?v=26QPDBe-NB8	https://www.youtube.com/watch?v=26QPDBe-NB8	https://www.youtube.com/watch?v=26QPDBe-NB8
Module3: The Network Layer:Network Layer Design Issues, Routing Algorithms, Congestion Control Algorithms, QoS.	https://www.youtube.com/watch?v=zHhyOyfq0mo	https://www.youtube.com/watch?v=Rb_k5YoNmA0	https://www.youtube.com/watch?v=olbr3WZwrdu
Module 4: The Transport	https://www.youtube.com/watch	https://www.youtube.com/watch?v=AP	https://www.youtube.com/watch?

Layer: The Transport Service, Elements of transport protocols, Congestion control, The internet transport protocols.	?v=APTw-1TGnbk	Tw-1TGnbk	v=APTw-1TGnbk
Module 5: Application Layer: Principles of Network Applications, The Web and HTTP, Electronic Mail in the Internet, DNS—The Internet's Directory Service.	https://www.youtube.com/watch?v=abeupgK5z48	https://www.youtube.com/watch?v=S9GEPaQ1lFs	https://www.youtube.com/watch?v=APTw-1TGnbk

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Subject: Database Management System

Sem:V

	Link1	Link2	Link3
Module1: Introduction to Databases, Overview of Database Languages and Architectures, Conceptual Data Modelling using Entities and Relationships.	https://www.youtube.com/watch?v=RqmHlpAo9bM	https://www.youtube.com/watch?v=9NoG4X9FsYk	https://www.youtube.com/watch?v=n3mHfQft5P8
Module2: Relational Model, Relational Algebr	https://www.youtube.com/watch?v=2kD6_S3G_rk	https://www.youtube.com/watch?v=IMthy1iwR3s	https://www.youtube.com/watch?v=x7HCI425SSY
Module 3:SQL, Advances Queries, Application Development:	https://www.youtube.com/watch?v=qDiUSS3T3So	https://www.youtube.com/watch?v=Ecg9N7PKOd8	https://www.youtube.com/watch?v=VTW2EzSMjOg
Module 4: Normalization: Database Design Theory and algorithms	https://www.youtube.com/watch?v=ne-oi5YrUm0	https://www.youtube.com/watch?v=OTCuykFHBaA	https://www.youtube.com/watch?v=_a1QyZO6JDY
Module 5: Transaction ProcessingConcurency Control in Databases	https://www.youtube.com/watch?v=NKmGVE85GUU	https://www.youtube.com/watch?v=_FGDqA7o0Bk	https://www.youtube.com/watch?v=HNkqThTq9oU

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Subject: FullStack Development

Sem:VI

	Link1	Link2	Link3
Module1: Web framework, MVC Design Pattern, Django Evolution, Views, Mapping URL to Views, Working of Django URL Confs and Loose Coupling, Errors in Django, Wild Card patterns in URLS.	https://www.youtube.com/watch?v=XvWG5KMncOU	https://www.youtube.com/watch?v=_LsTbdClnBA	https://www.youtube.com/watch?v=aX4aKiK5OUI
Module 2: Template System Basics, Using Django Template System, Basic Template Tags and Filters, MVT Development Pattern, Template Loading, Template Inheritance, MVT Development Pattern. Configuring Databases, Defining and Implementing Models, Inserting/Updating data, Selecting and deleting objects, Schema Evolution	https://www.youtube.com/watch?v=UmljXZlypDc	https://www.youtube.com/watch?v=DZVFgMSyRXI	https://www.youtube.com/watch?v=0rsilnpU1DU
Module 3: Activating Admin Interfaces, Using Admin Interfaces, Customizing Admin Interfaces, Reasons to use Admin Interfaces. Form Processing, Creating Feedback forms, Form submissions, custom validation, creating	https://www.youtube.com/watch?v=8uwjirzzT_Q	https://www.youtube.com/watch?v=Fg3EjshnZHA	https://www.youtube.com/watch?v=xc363xZGxXI

Model Forms, URLConf Ticks, Including Other URLConfs.			
Module4: Using Generic Views, Generic Views of Objects, Extending Generic Views of objects, Extending Generic Views. MIME Types, Generating Non-HTML contents like CSV and PDF, Syndication Feed Framework, Sitemap framework, Cookies, Sessions, Users and Authentication.	https://www.youtube.com/watch?v=pbvq0bZNNGI	https://www.youtube.com/watch?v=ai9J71DILhk	https://www.youtube.com/watch?v=JSRKuRV7B2U
Module 5: Ajax Solution, Java Script, XMLHttpRequest and Response, HTML, CSS, JSON, iFrames, Settings of Java Script in Django, jQuery and Basic AJAX, jQuery AJAX Facilities, Using jQuery UI Autocomplete in Django	https://www.youtube.com/watch?v=82hmvUYY6QA	https://www.youtube.com/watch?v=3t8zF6Q0GzQ	https://www.youtube.com/watch?v=-oLVZp1NQVE

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Subject: Deep Learning

Sem: VII

	Link1	Link2	Link3
Module1: Introduction to Deep Learning: Introduction, Deep learning Model, Historical Trends in Deep Learning, Machine Learning Basics: Learning Algorithms, Supervised Learning Algorithms, Unsupervised Learning Algorithms.	https://www.youtube.com/watch?v=ErnWZxJovaM	https://www.youtube.com/watch?v=6mSx_KJxcHI	https://www.youtube.com/watch?v=D6gtZrsYi6c
Module 2: Feedforward Networks: Introduction to feedforward neural networks, Gradient-Based Learning, BackPropagation and Other Differentiation Algorithms. Regularization for Deep Learning,	https://www.youtube.com/watch?v=kWOPkec1RSQ	https://www.youtube.com/watch?v=IHZwWFHWa-w	https://www.youtube.com/watch?v=1j5sNR7b5KM
Module 3: Optimization for Training Deep Models: Empirical Risk Minimization, Challenges in Neural Network Optimization, Basic Algorithms: Stochastic	https://www.youtube.com/watch?v=zAsgRxMXeZM	https://www.youtube.com/watch?v=vMh0zPT0tLI	https://www.youtube.com/watch?v=O3tVctB5Z4Q

Gradient Descent, Parameter Initialization Strategies, Algorithms with Adaptive Learning Rates: The AdaGrad algorithm, The RMSProp algorithm, Choosing the Right Optimization Algorithm.			
Module 4: Convolutional Networks: The Convolution Operation, Pooling, Convolution and Pooling as an Infinitely Strong Prior, Variants of the Basic Convolution Function, Structured Outputs, Data Types, Efficient Convolution Algorithms, Random or Unsupervised Features- LeNet, AlexNet.	https://www.youtube.com/watch?v=YRhxdVk_sIs	https://www.youtube.com/watch?v=CC huD_wD2UI	https://www.youtube.com/watch?v=T7t1uTzh3oI
Module 5: Recurrent and Recursive Neural Networks: Unfolding Computational Graphs, Recurrent Neural Network, Bidirectional RNNs, Deep Recurrent Networks, Recursive Neural Networks,. Applications: Large-Scale Deep Learning, Computer, Speech Recognition, Natural Language Processing and Other Applications.	https://www.youtube.com/watch?v=6niqTuYFZLQ	https://www.youtube.com/watch?v=9zh rxE5PQgY	https://www.youtube.com/watch?v=6z2oSx2Y8zQ

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Subject: Cloud Computing

Sem: VII

	Link1	Link2	Link3
Module 1: Introduction: Introduction ,Cloud Computing at a Glance, Historical Developments, Building Cloud Computing Environments, Amazon Web Services (AWS), Google AppEngine, Microsoft Azure, Hadoop, Force.com and Salesforce.com, Manjrasoft Aneka	https://www.youtube.com/watch?v=3Hz5dDRAhXw	https://www.youtube.com/watch?v=2LaAJq1lB1Q	https://www.youtube.com/watch?v=VvH3p0mD5gk
Module 2: Virtualization: Introduction, Characteristics of Virtualized, Environments Taxonomy of Virtualization Techniques, Execution Virtualization, Other Types of Virtualization, Virtualization and Cloud Computing, Pros	https://www.youtube.com/watch?v=_pPlanX5wQY	https://www.youtube.com/watch?v=Sb5SO3WRSws	https://www.youtube.com/watch?v=5LOwbCwAxiE

and Cons of Virtualization, Technology Examples			
Module 3: Cloud Computing Architecture: Introduction, Cloud Reference Model, Types of Clouds, Economics of the Cloud, Open Challenges	https://www.youtube.com/watch?v=LhhBpvWFyQc	https://www.youtube.com/watch?v=atFeAPfRI5Y	https://www.youtube.com/watch?v=GKtCwEQqaMI
Module 4: Cloud Security: Risks, Top concern for cloud users, privacy impact assessment, trust, OS security, VM Security, Security Risks posed by shared images and management OS.	https://www.youtube.com/watch?v=J2Y8aPzjG3Y	https://www.youtube.com/watch?v=1a2Kz3rJb4E	https://www.youtube.com/watch?v=Z7G4Yw5Yf9s
Module 5: Cloud Platforms in Industry Amazon web services: - Compute services, Storage services, Communication services, Additional services. Google AppEngine: - Architecture and core concepts, Application life cycle, Cost model, Observations.	https://www.youtube.com/watch?v=YgTTJALy7xc	https://www.youtube.com/watch?v=iNwkeoroqg8	https://www.youtube.com/watch?v=X4Jh4a8C-VM

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Subject: Operating Systems

Sem:III

	Link1	Link2	Link3
Module 1: Introduction to operating systems, System structures: What operating systems do; Computer System organization; Computer System architecture; Operating System structure;; Computing environments. Operating System Services: User – Operating System interface; System calls; Types of system calls; System programs; Operating system design and implementation; Operating System structure; Virtual machines; Operating System debugging, Operating System generation; System boot	https://www.youtube.com/watch?v=beARiqXjbUA	https://www.youtube.com/watch?v=dgN5-N87vz8	https://www.youtube.com/watch?v=QzPY9JO3uIw
Module 2: Process Management: Process concept; Process scheduling; Operations on	https://www.youtube.com/watch?v=aytWaG4mEJI	https://www.youtube.com/watch?v=YE Tbjkd-vM0	https://www.youtube.com/watch?v=TYzMMsyUGag

processes; Inter process communication Multi-threaded Programming: Overview; Multithreading models; Thread Libraries; Threading issues. Process Scheduling: Basic concepts; Scheduling Criteria; Scheduling Algorithms; Thread scheduling; Multiple-processor scheduling,			
Module 3: Process Synchronization: Synchronization: The critical section problem; Peterson's solution; Synchronization hardware; Semaphores; Classical problems of synchronization; Deadlocks: System model; Deadlock characterization; Methods for handling deadlocks; Deadlock prevention; Deadlock avoidance; Deadlock detection and recovery from deadlock.	https://www.youtube.com/watch?v=HakjFY31xWM	https://www.youtube.com/watch?v=JRfX4Abr2tYZWMfluGGqZQHaKe	https://www.youtube.com/watch?v=UqxFWP8HzaAcNSO9ea6LSwHaFI
Module 4: Memory Management: Memory management strategies: Background; Swapping;	https://www.youtube.com/watch?v=lxus-whQDnk	https://www.youtube.com/watch?v=ZN-baY3x85o	https://www.youtube.com/watch?v=vtyXZWp9Fsk

Contiguous memory allocation; Paging; Structure of page table; Segmentation. Virtual Memory Management: Background; Demand paging; Copy-on-write; Page replacement; Allocation of frames; Thrashing.			
Module 5: File System, Implementation of File System: File system: File concept; Access methods; Directory and Disk structure; File system mounting; File sharing; Implementing File system: File system structure; File system implementation; Directory implementation; Disk structure; Disk attachment; Disk scheduling; Disk management; Protection: Goals of protection, Principles of protection, Domain of protection, Access matrix.	https://www.youtube.com/watch?v=DEtBiHvBPJ8	https://www.youtube.com/watch?v=t8Rs9AbqHUc	https://www.youtube.com/watch?v=gtkQGv78iuA

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Subject: Analysis and Design of Algorithms

Sem:IV

	Link1	Link2	Link3
Module1: INTRODUCTION: What is an Algorithm?, Fundamentals of Algorithmic Problem Solving. FUNDAMENTALS OF THE ANALYSIS OF ALGORITHM EFFICIENCY: Analysis Framework, Asymptotic Notations and Basic Efficiency Classes, Mathematical Analysis of Non recursive Algorithms, Mathematical Analysis of Recursive Algorithms. BRUTE FORCE APPROACHES: Selection Sort and Bubble Sort, Sequential Search and Brute Force String Matching.	https://www.youtube.com/watch?v=6hfOvs8pY1k	https://www.youtube.com/watch?v=9cfa63LvuZw	https://www.youtube.com/watch?v=7WUXapSxdxs
Module2: BRUTE FORCE APPROACHES (contd.): Exhaustive Search	https://www.youtube.com/watch?v=8mJ-OhcfpYg	https://www.youtube.com/watch?v=Vtckgz38QHs	https://www.youtube.com/watch?v=pbALPF26YRs

(Travelling Salesman problem and Knapsack Problem). DECREASE-AND-CONQUER: Insertion Sort, Topological Sorting. DIVIDE AND CONQUER: Merge Sort, Quick Sort, Binary Tree Traversals, Multiplication of Large Integers and Strassen's Matrix Multiplication			
Module3: TRANSFORM-AND-CONQUER: Balanced Search Trees, Heaps and Heapsort. SPACE-TIME TRADEOFFS: Sorting by Counting: Comparison counting sort, Input Enhancement in String Matching: Horspool's Algorithm.	https://www.geeksforgeeks.org/balanced-binary-tree/	https://www.geeksforgeeks.org/heap-sort/	https://www.youtube.com/watch?v=PHXAOKQk2dw
Module4: DYNAMIC PROGRAMMING: Three basic examples, The Knapsack Problem and Memory Functions, Warshall's and Floyd's Algorithms. THE GREEDY METHODS Prim's Algorithm, Kruskal's Algorithm, Dijkstra's Algorithm, Huffman Trees and Codes.	https://www.youtube.com/watch?v=Win2WjQfp9c	https://www.youtube.com/watch?v=NI0rf2P9gE	https://www.youtube.com/watch?v=4ZIRH0eK-qQ

Module5: LIMITATIONS OF ALGORITHMIC POWER: Decision Trees, P, NP, and NP-Complete Problems. COPING WITH LIMITATIONS OF ALGORITHMIC POWER: Backtracking (n-Queens problem, Subset-sum problem), Branch-and-Bound (Knapsack problem), Approximation algorithms for NP-Hard problems (Knapsack problem).	https://www.youtube.com/watch?v=eHZifpgyH_4	https://www.youtube.com/watch?v=kyLxTdsT8ws	https://www.youtube.com/watch?v=NAxiJKNQu7o
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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Subject: Theory of Computation

Sem: V

	Link1	Link2	Link3
Module1: Introduction to Finite Automata, Structural Representations, Automata and Complexity. The Central Concepts of Automata Theory. Deterministic Finite Automata, Nondeterministic Finite Automata, An Application: Text Search, Finite Automata with Epsilon-Transitions.	https://www.youtube.com/watch?v=-LR2EIqoV6w	https://www.youtube.com/watch?v=V10hzjgoklA	https://www.youtube.com/watch?v=SNviYjOF6AA
Module2: Regular Expressions, Finite Automata and Regular Expressions, Proving Languages not to	https://www.youtube.com/watch?v=DiXMoBMWMmA	https://www.youtube.com/watch?v=Ty9tpikilAo	https://www.youtube.com/watch?v=fs-0yWVyb2g

be Regular. Closure Properties of Regular Languages, Equivalence and Minimization of Automata, Applications of Regular Expressions			
Module3: Context -Free Grammars, Parse Trees, Ambiguity in Grammars and Languages, Ambiguity in Grammars and Languages, Definition of the Pushdown Automaton, The Languages of a PDA, Equivalence of PDA's and CFG's, Deterministic Pushdown Automata.	https://www.youtube.com/watch?v=a3CY-9rF4ec	https://www.youtube.com/watch?v=mjQJ98j3koc	https://www.youtube.com/watch?v=GwS__G2M8mU
Module4: Normal Forms for	https://www.youtube.com/watch?v=FNPSlnj3Vt0	https://www.youtube.com/watch?v=jRhqx1_KcCk	https://www.youtube.com/watch?v=P_F0-kY_kKQ

Context-Free Grammars, The Pumping Lemma for Context-Free Languages, Closure Properties of Context-Free Languages.			
Module5: Introduction to Turing Machines: Problems That Computers Cannot Solve, The Turing Machine, Programming Techniques for Turing Machines, Extensions to the Basic Turing Machine, Undecidability: A Language That Is Not Recursively Enumerable.	https://www.youtube.com/watch?v=eqvBaj8UYz4	https://www.youtube.com/watch?v=23vQEJWXc-k	https://www.youtube.com/watch?v=PvLaPKPzq2I

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Subject: Machine Learning

Sem:VI

	Link1	Link2	Link3
Module1: Introduction: Need for Machine Learning, Machine Learning Explained, Machine Learning in Relation to other Fields, Types of Machine Learning, Challenges of Machine Learning, Machine Learning Process, Machine Learning Applications. Understanding Data – 1: Introduction, Big Data Analysis Framework, Descriptive Statistics, Univariate Data Analysis and Visualization.	https://www.youtube.com/watch?v=ukzF19rgwfU	https://www.youtube.com/watch?v=5f6V6p6xG9Y	https://www.youtube.com/watch?v=Vfo5le26IhY
Module2: Understanding Data – 2: Bivariate Data and Multivariate Data, Multivariate Statistics, Essential Mathematics for Multivariate Data, Feature Engineering and Dimensionality Reduction	https://www.youtube.com/watch?v=yJ84a-_sWnQ	https://www.youtube.com/watch?v=Vs2bzT07GIM	https://www.youtube.com/watch?v=fu8LHxufs7I

Techniques. Basic Learning Theory: Design of Learning System, Introduction to Concept of Learning, Modelling in Machine Learning.			
Module3: Similarity-based Learning: Nearest-Neighbor Learning, Weighted K-Nearest-Neighbor Algorithm, Nearest Centroid Classifier, Locally Weighted Regression (LWR). Regression Analysis: Introduction to Regression, Introduction to Linear Regression, Multiple Linear Regression, Polynomial Regression, Logistic Regression. Decision Tree Learning: Introduction to Decision Tree Learning Model, Decision Tree Induction Algorithms.	https://www.youtube.com/watch?v=HVXime0nQeI	https://www.youtube.com/watch?v=nk2CQITm_eo	https://www.youtube.com/watch?v=_L39rN6gz7Y
Module4: Bayesian Learning: Introduction to Probability-based Learning, Fundamentals of Bayes Theorem, Classification Using	https://www.youtube.com/watch?v=HZGCoVF3YvM	https://www.youtube.com/watch?v=aircAruvnKk	https://www.youtube.com/watch?v=d0T9g6nDAtY

Bayes Model, Naïve Bayes Algorithm for Continuous Attributes. Artificial Neural Networks: Introduction, Biological Neurons, Artificial Neurons, Perceptron and Learning Theory, Types of Artificial Neural Networks, Popular Applications of Artificial Neural Networks, Advantages and Disadvantages of ANN, Challenges of ANN			
Module5: Clustering Algorithms: Introduction to Clustering Approaches, Proximity Measures, Hierarchical Clustering Algorithms, Partitional Clustering Algorithm, Density-based Methods, Grid-based Approach. Reinforcement Learning: Overview of Reinforcement Learning, Scope of Reinforcement Learning, Reinforcement Learning as Machine Learning, Components of Reinforcement Learning,	https://www.youtube.com/watch?v=4cxVDUybHrI	https://www.youtube.com/watch?v=i7q8bISGwMQ	https://www.youtube.com/watch?v=0MNVhXEX9to

Markov Decision Process, Multi-Arm Bandit Problem and Reinforcement Problem Types, Model-based Learning, Model Free Methods, Q-Learning, SARSA Learning.			
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RAJARAJESWARI COLLEGE OF ENGINEERING

#14, Ramoholli Cross, Kumbalaguda, Bengaluru-560074.

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Subject: Compiler Design

Sem:VI

	Link1	Link2	Link3
Module1: Introduction: Language Processors, The structure of Compiler, The evolution of Programming Languages, The science of Building a Compiler, Applications of Compiler Technology, Programming Language Basics A Simple Syntax Directed Translator: Introduction, Syntax Definition, Syntax Directed Translation, Parsing	https://www.youtube.com/watch?v=5ZmFlxrNaN8	https://www.youtube.com/watch?v=TqznW8T0B5o	https://www.youtube.com/watch?v=iddRD8tJi44
Module2: Lexical Analysis: The Role of Lexical Analyzer, Input buffering, Specification of Tokens, Recognition of Tokens, The lexical Analyzer Generator Lex Syntax Analysis: Introduction, Context Free Grammars, Writing a Grammar	https://www.youtube.com/watch?v=hMaOntIpGn4	https://www.youtube.com/watch?v=WmEQ7M9qZpI	https://www.youtube.com/watch?v=Sveob49iOpA
Module3: Top-Down Parsing: Recursive Descent Parsing, First and Follow, LL(1) Grammars Bottom Up	https://www.youtube.com/watch?v=iddRD8tJi44	https://www.youtube.com/watch?v=fmd-tDDPonY	https://www.youtube.com/watch?v=m76RRYt6-pA

Parsing: Reductions, Handle Pruning, Shift Reduce Parsing			
Module4: Introduction to LR Parsing: Simple LR, LR Parsing Algorithm, Construction of SLR parsing Tables, Viable Prefixes Syntax Directed Definitions, Evaluation Orders for SDD	https://www.youtube.com/watch?v=JsCx0p4QvqM	https://www.youtube.com/watch?v=3E9FKZ4zeLk	https://www.youtube.com/watch?v=vhu7hPnzdVE
Module5: Variants of Syntax Trees, Three Address Code, Types and Declarations. Control Flow Code generation: Issues in the Design of a Code Generator, The target language	https://www.youtube.com/watch?v=yzZf8f_4Gbg	https://www.youtube.com/watch?v=bGdsA0wHrak	https://www.youtube.com/watch?v=2LhKod_GlyU

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Subject: DataStructures and Applications

Sem:III

	Link1	Link2	Link3
Module1: INTRODUCTION TO DATA STRUCTURES: Data Structures, Classifications (Primitive & Non-Primitive), Data structure Operations Review of pointers and dynamic Memory Allocation, ARRAYS and STRUCTURES: Arrays, Dynamic Allocated Arrays, Structures and Unions, Polynomials, Sparse Matrices, representation of Multidimensional Arrays, Strings STACKS: Stacks, Stacks Using Dynamic Arrays, Evaluation and conversion of Expressions	https://www.youtube.com/watch?v=7wWfdTGWHm4	https://www.youtube.com/watch?v=eAvE6RgMEJk	https://www.youtube.com/watch?v=mNAX7clJoWY
Module2: QUEUES: Queues, Circular Queues, Using Dynamic Arrays, Multiple Stacks	https://www.youtube.com/watch?v=8sjFA-IX-Ww	https://www.youtube.com/watch?v=OjI-cNKqQWw	https://www.youtube.com/watch?v=nxtDe6Gq4t4

and queues. LINKED LISTS : Singly Linked, Lists and Chains, Representing Chains in C, Linked Stacks and Queues, Polynomials			
Module3: LINKED LISTS : Additional List Operations, Sparse Matrices, Doubly Linked List. TREES: Introduction, Binary Trees, Binary Tree Traversals, Threaded Binary Trees.	https://www.youtube.com/watch?v=58YbpRDc4yw	https://www.youtube.com/watch?v=v6NAGqWcPsc	https://www.youtube.com/watch?v=AndqtbITfe8
Module4: TREES(Cont.): Binary Search trees, Selection Trees, Forests, Representation of Disjoint sets, Counting Binary Trees, GRAPHS: The Graph Abstract Data Types, Elementary Graph Operations	https://www.youtube.com/watch?v=Gt2yBZAhsGM	https://www.youtube.com/watch?v=JfSdGQdAzq8	https://www.youtube.com/watch?v=4ngBDF0nTGM
Module5: HASHING: Introduction, Static Hashing, Dynamic Hashing PRIORITY QUEUES: Single and double ended Priority Queues, Leftist Trees INTRODUCTION TO EFFICIENT BINARY SEARCH TREES: Optimal Binary Search Trees	https://www.youtube.com/watch?v=K_cFSqksz_o	https://www.youtube.com/watch?v=6p6sIVsAlEo	https://www.youtube.com/watch?v=vLS-zRCHo-Y

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Subject: Database Management Systems

Sem:IV

	Link1	Link2	Link3
Module1: Introduction to Databases: Introduction, Characteristics of database approach, Overview of Database Languages and Architectures: Data Models, Schemas, and Instances. Three schema architecture and data independence, database languages, and interfaces, The Database System environment. Conceptual Data Modelling using Entities and Relationships: Entity types, Entity sets and structural constraints, Weak entity types, ER diagrams, Specialization and Generalization.	https://www.youtube.com/watch?v=ztHopE5Wnpc	https://www.youtube.com/watch?v=5kZ2t0xDi9g	https://www.youtube.com/watch?v=8V40I6Zr3Z8
Module2: Relational	https://www.youtube.com/watch?v=Q45sr5p_NmQ	https://www.youtube.com/watch?v=76v3gRns28U	https://www.youtube.com/watch?v=W06BhScidRk

Model: Relational Model Concepts, Relational Model Constraints and relational database schemas, Update operations, transactions, and dealing with constraint violations. Relational Algebra: Unary and Binary relational operations, additional relational operations (aggregate, grouping, etc.) Examples of Queries in relational algebra. Mapping Conceptual Design into a Logical Design: Relational Database Design using ER-to-Relational mapping.			
Module3: Normalization: Database Design Theory – Introduction to Normalization using Functional and Multivalued Dependencies: Informal design guidelines for relation schema,	https://www.youtube.com/watch?v=GFQaEYEc8_8	https://www.youtube.com/watch?v=1JUO8yG1w7I	https://www.youtube.com/watch?v=9yeOJ0ZMUYw

Functional Dependencies, Normal Forms based on Primary Keys, Second and Third Normal Forms, Boyce-Codd Normal Form, Multivalued Dependency and Fourth Normal Form, Join Dependencies and Fifth Normal Form. SQL: SQL data definition and data types, Schema change statements in SQL, specifying constraints in SQL, retrieval queries in SQL, INSERT, DELETE, and UPDATE statements in SQL, Additional features of SQL			
Module4: SQL: Advanced Queries: More complex SQL retrieval queries, Specifying constraints as assertions and action triggers, Views in SQL. Transaction Processing: Introduction to Transaction Processing,	https://www.youtube.com/watch?v=-mpUCHbeTtM	https://www.youtube.com/watch?v=Ec9N7PKOd8	https://www.youtube.com/watch?v=CR1KKWdsPxx

Transaction and System concepts, Desirable properties of Transactions, Characterizing schedules based on recoverability, Characterizing schedules based on Serializability, Transaction support in SQL.			
Module5: Concurrency Control in Databases: Two-phase locking techniques for Concurrency control, Concurrency control based on Timestamp ordering, Multiversion Concurrency control techniques, NOSQL Databases and Big Data Storage Systems: Introduction to NOSQL Systems, The CAP Theorem, Document-NOSQL Key-Value Stores, Column-Based or Wide Column NOSQL Systems, NOSQL Graph Databases and Neo4j	https://www.youtube.com/watch?v=bXpkEt5P_Js	https://www.youtube.com/watch?v=uD3p_rZPBUQ	https://www.youtube.com/watch?v=8jNPelugC2s

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Subject: Computer Networks

Sem:V

	Link1	Link2	Link3
Module1: Introduction: Data Communications, Networks, Network Types, Networks Models: Protocol Layering, TCP/IP Protocol suite, The OSI model, Introduction to Physical Layer: Transmission media, Guided Media, Unguided Media: Wireless. Switching: Packet Switching and its types.	https://www.youtube.com/watch?v=3QhU9jd03a0	https://www.youtube.com/watch?v=vv4y_uOneC0	https://www.youtube.com/watch?v=vv4y_uOneC0
Module2: Data Link Layer: Error Detection and Correction: Introduction, Block Coding, Cyclic Codes. Data link control: DLC Services: Framing, Flow Control, Error Control, Connectionless and Connection Oriented, Data link layer protocols, High Level Data Link Control. Media Access Control: Random Access, Controlled Access. Check Sum and Point to Point Protocol	https://www.youtube.com/watch?v=wHVGb_wCnUY	https://www.youtube.com/watch?v=3QhU9jd03a0	https://www.youtube.com/watch?v=vf1WS15JiCo
Module3: Network Layer: Network layer Services,	https://www.youtube.com/watch?v=3QhU9jd03a0	https://www.youtube.com/watch?v=3QhU9jd03a0	https://www.youtube.com/watch?v=3QhU9jd03a0

Packet Switching, IPv4 Address, IPv4 Datagram, IPv6 Datagram, Introduction to Routing Algorithms, Unicast Routing Protocols: DVR, LSR, PVR, Unicast Routing protocols: RIP, OSPF, BGP, Multicasting Routing-MOSPF			
Module4: Introduction to Transport Layer: Introduction, Transport-Layer Protocols: Introduction, User Datagram Protocol, Transmission Control Protocol: services, features, segments, TCP connections, flow control, Error control, Congestion control.	https://www.youtube.com/watch?v=dXh5mN59wL0	https://www.youtube.com/watch?v=n5Hth1dYQ9o	https://www.youtube.com/watch?v=zYnQyd58NDw
Module5: Introduction to Application Layer: Introduction, Client-Server Programming, Standard ClientServer Protocols: World Wide Web and HTTP, FTP, Electronic Mail, Domain Name System (DNS), TELNET, Secure Shell (SSH)	https://www.youtube.com/watch?v=rxdBKMDcdN0	https://www.youtube.com/watch?v=-YXeBksk5As	https://www.youtube.com/watch?v=vv4y_uOneC0

