

School of Engineering and Technology
Department of Computer Science and Engineering
Curriculum Feedback Analysis 2023-24

The Department of Computer Science and Engineering revises its curriculum for the programs offered every year based on the relevant trends in industry and emerging technologies by considering the feedback provided by all its stakeholders on the curriculum. This report is an analysis of the feedback collected from the various stakeholders like students, alumni, faculty members, parents and industry experts. This report shall be forwarded to the Department Curriculum Design and Development Cell (CDC) for consideration while revising the curriculum.

This academic year feedback was collected from a total of 672 students, 58 faculty members, 42 alumni, 12 employers and 14 parents. This feedback was analyzed and this report contains the analysis and recommendations to CDC based on the analysis carried out.

Student Feedback on Curriculum

A total of 672 students took the curriculum feedback survey. The questionnaire and the number of responses for each year of study was as follows

All Years of Study (UG & PG)					
Total Number of Students Participated in the Survey : 672 students					
Questions	Excellent	Very Good	Good	Average	Needs Improvement
Does the content of the curriculum satisfy the stated objectives and learning outcomes?	134	344	132	45	17
Does the curriculum cover advanced topics?	126	356	122	46	22
Is the curriculum effective in developing critical/analytical thinking?	122	344	143	54	9
Whether the curriculum enhances your knowledge and skills in the relevant domain?	121	412	95	33	11
Are the textbooks and reference materials relevant to the content of the curriculum?	134	388	114	27	9
Does the curriculum orient towards higher education?	124	402	115	24	7
Does the curriculum enable the students to apply their knowledge in real-life situations?	136	387	117	21	11
Is employability given weightage in the design and development of curriculum?	137	386	114	25	10
Does the curriculum promote self-study and attitude of research?	145	389	92	28	18
Does the curriculum meet your overall expectations?	121	388	124	30	9

The above table is a representation of the feedback responses given by the students as per the questionnaire.

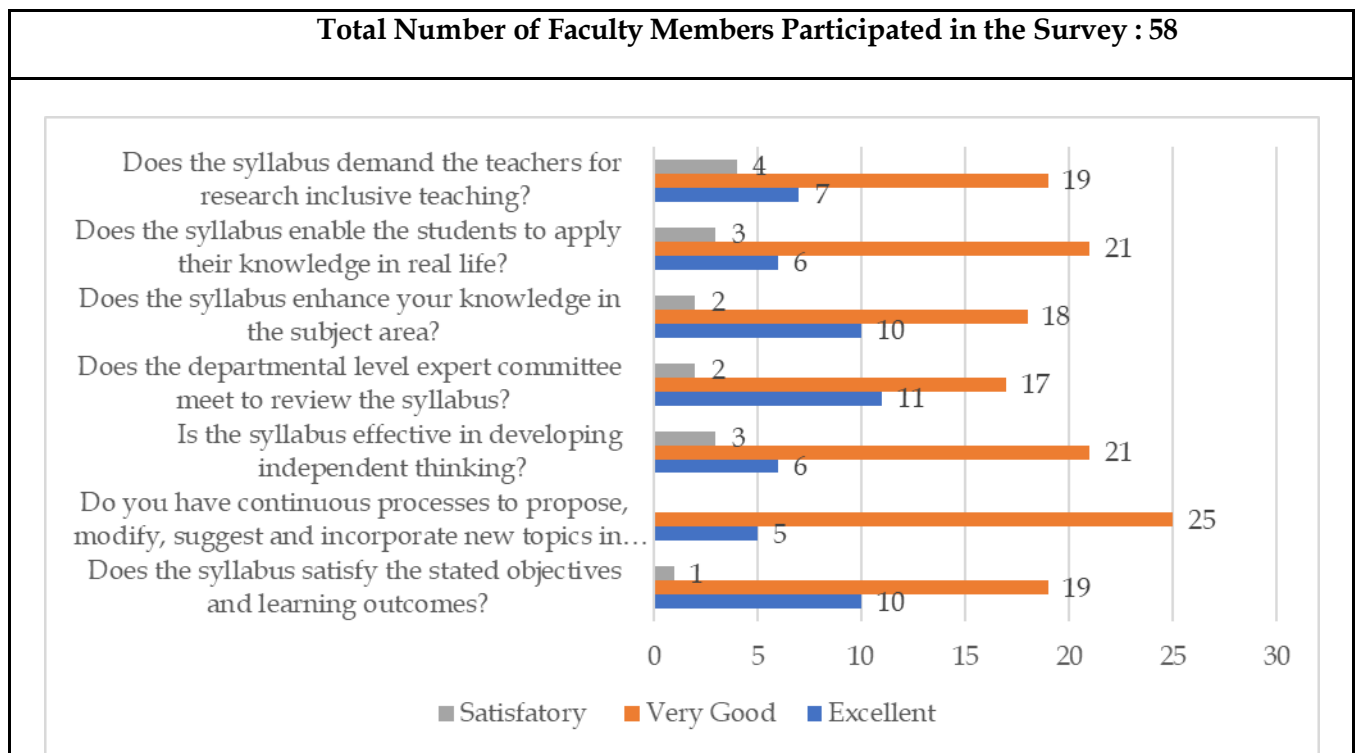
The graph given below depicts the overall expectation meeting of the students from all years as far as syllabus is concerned. From the feedback it can be seen, where 90% of the students are satisfied with the curriculum being offered. However, when the General comments and suggestions were analyzed, the following were the main points given by the students

- In the curriculum of B.Tech in Computer Science and Engineering and M.Tech in Computer Science and Engineering, no major concerns were present based on the feedback.
- The students under specialization program such as CSE(AIML), CSE(DS), CSE(IOT) & M.Tech(DS) has given concerns on the specialization core course and relevant credits.

Faculty Feedback on Curriculum

Faculty members are the backbone of any higher education institution and their feedback is very important to analyse the curriculum and to update it as per the necessity. As a practice, the department takes feedback from every course handling faculty member and the below section is an analysis of the same.

The questionnaire floated with 60 faculty members concentrated on the below questions and also on suggestions/ recommendations for the courses handled by them in the odd/even semester of 2022- 23 . The synopsis of the same is given below



Based on the feedback of the faculty members, there was a need for restructuring the course structure for B.Tech in UG programs and M.Tech DS. This was due to courses having certain pre-requisites falling in the same semester of study. This was deliberated by the members of CDC and the course structure was recommended to be changed for M.Tech in DS.

Since the UG program undergoes NEP 2020 policy and structure level implementation, the UG program structure have undergone increase in credits, curriculum structure change and NEP policy inclusion.

However, the UG (CSE / CSE specialization and IT) & PG (CSE) structure for the existing batch of students remain the same, still, the course level syllabus content updation stands application of them. Change in the syllabus has been recommended by CDC and submitted in annexure for the BOS 2023 approval.

Feedback from Alumni.

The feedback was also collected from Alumni, who are one of our stakeholders and also BOS Members. A few majorly observed suggestions are

1. To improve Programming and Logical Thinking among the students
2. To make use of Kaggle and Coder's earth websites to improve the design pattern and learn real-time problem-solving.
3. Certifications and project works are equally important to showcase their technical and soft skills during the placements.

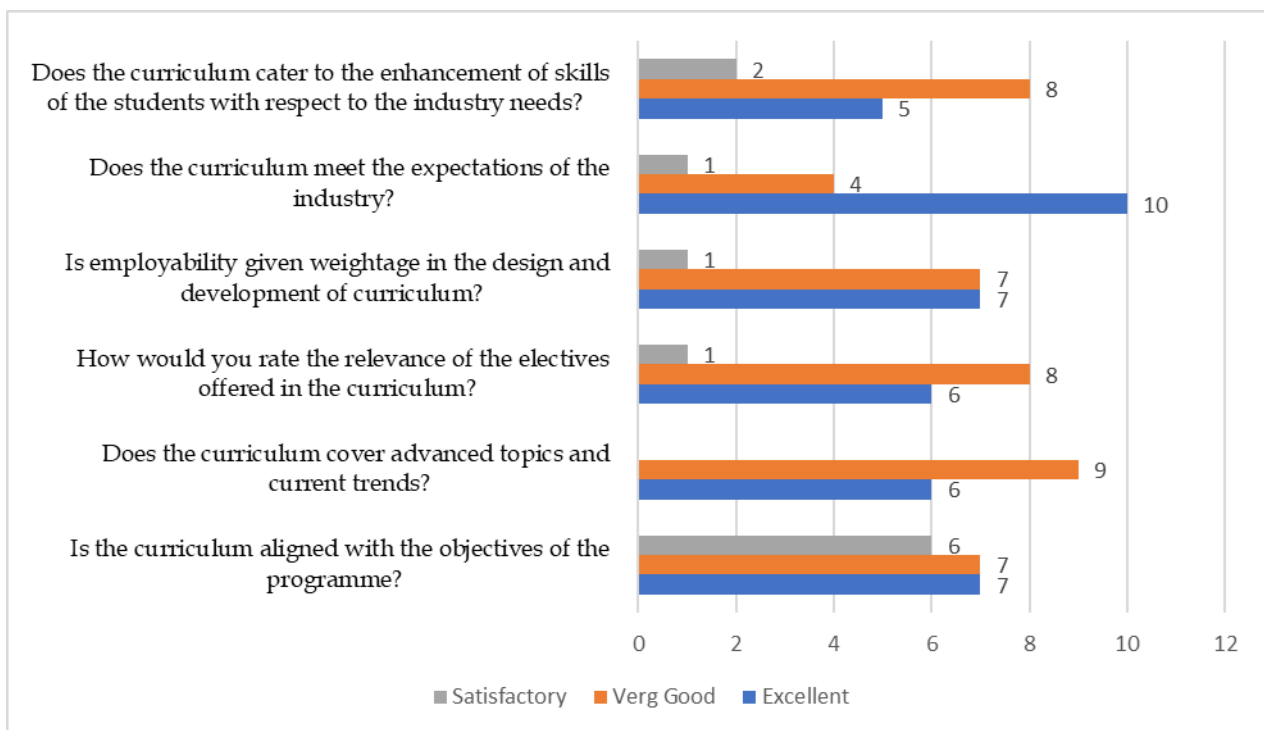
Total Number of Alumni Participated in the Survey : 42 (2016 to 2023)					
Questions	Excellent	Very Good	Satisfactory	Average	Needs to Improve
Is the syllabus updated on a regular basis depending on the current trends and advanced topics?	8	19	12	0	3
Does the syllabus orient towards higher education?	7	17	12	2	4
Does the syllabus provide employability weightage?	8	21	7	2	4
Does the syllabus meet the expectations of the industry?	9	14	11	6	2
Does the syllabus enable the students to connect the knowledge to real life application?	6	17	11	7	1
Does the syllabus encourage entrepreneurship?	6	15	9	8	4
Do you think that the syllabus motivates the students for research and development?	5	18	12	4	3

Feedback from Industry Expert and Academic Expert

In addition to the above feedback collected from faculty members, feedbacks were also collected from alumni, employers and parents. The major suggestions as given by these stakeholders areas follows

1. Inclusion of more hands on training in the trending areas like artificial intelligence and machine learning.
2. To increase credits for Project work. Project work to concentrate on the specialization
3. Certifications and real time projects could improve the skillset and placement opportunity
4. Constant programming practices throughout the course of study.
5. Observed the eligibility criteria for MTech in DS is allowed from other stream of study, in such case the Level of core course deliberations should begin from beginner level and end in expert level. In most cases prerequisite courses may not fit. Alternate solution to be looked for compensation.

Total Number of Industry and Academic Experts participated survey : 15



Feedback from Parents

Total Number of parents participated survey : 14			
Questions	Excellent	Very Good	Satisfactory
Does the syllabus orient the students toward higher education?	7	4	4
Is employability given weightage in the design and development of the syllabus?	11	4	-
Is the syllabus have component on value based education?	9	3	3
Does the syllabus have components to serve the needs of the society?	10	4	1
Does the syllabus promote self-study and attitude of research?	12	3	-
Does the syllabus help the students to enhance their personality?	13	1	1

This analysis report on all the feedback collected from the students, faculty members, alumni and verticals shall be presented to the Department CDC for discussion and deliberation to be recommended to the Department Board of Studies for the academic year 2023-24 to be held in the month of February/ March 2023.



CDC Coordinator



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School of Engineering and Technology
Department of Computer Science and Engineering
Action Taken Report on Curriculum Feedback Analysis 2022-23



The Department of Computer Science and Engineering collects analyses and takes action based on the feedback received from all the stakeholders as far as curriculum is concerned. The stakeholders from whom the feedback is collected are

1. Students
2. Teachers
3. Alumni
4. Parents
5. Industry Experts / Academic Experts

The Curriculum Design and Development Cell (CDC) of the Department initiates this feedback collection, also analyses the same, and prepares a feedback analysis report on the curriculum every academic year. These are then proposed to the Department Board of Studies (BoS) for their approval to be included in the curriculum for the subsequent academic year.

This report highlights the action taken in the below mentioned courses which have been revised as per the feedbacks received from the stakeholders.

Semester: I

Course: Computer Programming

Course Code: CS134P/CS234P

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
Unit-1	Unit-1 Algorithms and Flowcharts, Constants, Variables and Datatypes, Operators Algorithms and flowcharts: Algorithms, Flowcharts, Examples on algorithms and flowcharts. Basic structure of a C program, C Tokens, Data types. Declaration of variables. Operators: Arithmetic operators, Relational operators, Logical operators, Assignment operators, Increment and Decrement operators, Conditional operator, Bitwise operators, Special operators, Arithmetic expressions, Evaluation of expressions, Precedence of Arithmetic operators, Type conversions in expressions, Operator precedence and associatively	Unit 1: Algorithms and Flowcharts, Constants, Variables and Data types, Operators Algorithms and flowcharts: Algorithms, Flowcharts, Examples on algorithms and flowcharts. Basic structure of a C program, C Tokens, Data types. Declaration of variables. Operators: Arithmetic operators, Relational operators, Logical operators, Assignment operators, Increment and Decrement operators, Conditional operator, Bitwise operators, Special operators, Arithmetic expressions, Evaluation of expressions, Precedence of Arithmetic operators, Type conversions in expressions, Operator precedence and associativity, Coding Ethics and Coding Standards.	Based on stakeholders feedback	Applicable for Batch 2023
Unit-3	Unit-3 Arrays, User Defined Functions Arrays: One-dimensional Arrays, Declaration of one-dimensional Arrays, Initialization of one-dimensional Arrays, Two-dimensional Arrays, Initializing two dimensional Arrays. User-defined functions: Need for User-defined Functions, A multi-function Program, Elements of user - defined Functions, Definition of Functions, Return Values and their types, Function Calls, Function Declaration, Category of Functions, No Arguments and no Return Values, Arguments but no Return	Unit 3: Arrays, User Defined Functions Arrays: One-dimensional Arrays, Declaration of one-dimensional Arrays, Initialization of one-dimensional Arrays, Two-dimensional Arrays, Initializing two dimensional Arrays. User-defined functions: Need for User-defined Functions, A multifunction		

<p>Unit-4</p>	<p>Science)-2022-26 Values, Arguments with Return Values, No Argument but Returns a Value, Functions that Return Multiple Value, recursion -recursive functions, Limitations of recursion. Storage Class Specifiers</p>	<p>Program, Elements of user - defined Functions, Definition of Functions, Return Values and their types, Function Calls, Function Declaration, Category of Functions, No Arguments and no Return Values, Arguments but no Return Values, Arguments with Return Values, No Argument but Returns a Value, Functions that Return Multiple Value, recursion - recursive functions, Limitations of recursion.</p>		
<p>Unit-5</p>	<p>Unit-4 Pointers String concepts: declaration and initialization, String I/O functions, Array of strings, String manipulation function. Understanding the pointers, Accessing the Address of a Variable, Declaring Pointer Variables, Initialization of Pointer Variables, Accessing a Variable through its Pointer, Pointer Expressions, Pointer Increments and Scale Factor, Pointers and Arrays, Pointers and Character Strings, Pointers as Function Arguments. Dynamic Memory Allocation;</p> <p>Unit-5 Strings, Derived Types, Files Basic of structures, structures and Functions, Arrays of structures, structure Data types, type definition. Unions Files: Defining, opening and closing of files, Input and output operations, Standard Library Functions for Files</p>	<p>Unit 4: Strings, Pointers String concepts: declaration and initialization, String I/O functions, Array of strings, String manipulation function. Understanding the pointers, Accessing the Address of a Variable, Declaring Pointer Variables, Initialization of Pointer Variables, Accessing a Variable through its Pointer, Pointer Expressions, Pointer Increments and Scale Factor, Pointers and Arrays, Pointers and Character Strings, Pointers as Function Arguments</p> <p>Unit 5: Structures, Unions and Files Basic of structures, structures and Functions, Arrays of structures, structure Data types, type definition, Unions, Overview of</p>		

		UI/UX design, Demonstration of gcc compiler for compiling C codes.		
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Semester: IV

Course: Operating System

Course Code: CS432P/CSE432P

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
UNIT-3	Process Synchronization: Background, The Critical Section Problem, Peterson's Solution, Synchronization Hardware, Semaphores, Classical Problems of Synchronization, Monitors, Synchronization Examples	Process Synchronization: Background, The Critical Section Problem, Peterson's Solution, Synchronization Hardware, Semaphores, Classical Problems of Synchronization, Monitors, Synchronization Examples, Deadlocks.	Based on stakeholders feedback and subject experts suggestions.	Applicable for Batch 2022

Semester: V

Course: Computer Graphics with OpenGL

Course Code: CS541E01

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
UNIT-4	Unit-4 3D viewing & Projections Geometry, Vectors, Matrices and Homogeneous Coordinates, Primitives, Polygonal Meshes, Drawing Primitives, Viewing and Projections, Perspective Projection, Orthographic Projection, The Viewing Transform, A Simple Avatar, Viewer Nodes in Scene Graphics	Unit-4 3D Projections ,Light & Material with Open GL Viewing and Projections, Perspective Projection, Orthographic Projection, Light and Material, Vision and Color, OpenGL Materials, OpenGL Lighting, Lights and Materials in Scenes, Textures, Texture targets, Mipmaps and Filtering, Texture Transformations, Creating Texture with OpenGL, Loading Data into Texture, Texture Coordinate Generation,	To accommodate recent industry based concepts	Applicable for 2021 and 2022 Batch
UNIT-5	Light, Material & Textures with Open GL Light and Material, Vision and Color, OpenGL Materials, OpenGL Lighting, Lights and Materials in Scenes, Case Study: Textures, Texture targets, Mipmaps and Filtering, Texture Transformations, Creating Texture with OpenGL, Loading Data into Texture, Texture Coordinate Generation,	Unit-5 Introduction to Unreal Engine Getting Started with UE4, Hardware & software Specifications, Installing & epic games		

	Texture Objects.	Launcher, Starter Content, Learn Tab, Marketplace Tab, Library Tab, Vault Cache, Actors and geometry. Components, Tools and editors, Unreal editor Interface, Assets and packages, Coordinate Space Terminology, Directory Structure.		
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Semester: III

Course: Computer Networks

Course Code: CS531P/CSE435P

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
UNIT-1	Unit-1 DATA COMMUNICATIONS Components - Direction of Data flow - networks - Components and Categories - types of Connections - Topologies - Protocols and Standards - ISO / OSI model - Transmission Media - Coaxial Cable - Fiber Optics - Line Coding - Modems - RS232 Interfacing sequences.	Unit-1 DATA COMMUNICATIONS - Proposed Introduction- Data communications: Components - Data Flow - Networks - Physical Structures - Network Types - Protocol Layering - TCP/IP Protocol Suite - OSI Model	To accommodate recent industry-based concepts	Applicable for 2022,2021 Batch
UNIT-2	Unit-2 DATA LINK LAYER Error - detection and correction - Parity - LRC - CRC - Hamming code - low Control and Error control - stop and wait - go back-N ARQ - selective repeat ARQ- sliding window - HDLC. - LAN - Ethernet IEEE 802.3 - IEEE 802.4 - IEEE 802.5 - IEEE 802.11 - FDDI - SONET - Bridges.	Data and Signals - Digital Signals- Data Rate Limits- Performance- Digital Transmission - Digital to Digital Conversion- Line coding -Line coding Schemes -Transmission Media UNIT -2 Data-Link Layer-Proposed Introduction - Link Layer Addressing - Error Detection and Correction-Cyclic		
UNIT-4	Unit-4 TRANSPORT LAYER Duties of transport layer - Multiplexing -			

<p>UNIT-5</p>	<p>Demultiplexing – Sockets – User Datagram Protocol (UDP) – Transmission Control Protocol (TCP) – Congestion Control – Quality of services (QOS) – Integrated Services.</p> <p>Unit-5 APPLICATION LAYER</p> <p>Domain Name Space (DNS) – SMTP – FTP – HTTP – WWW – Security – Cryptography-Case study.</p>	<p>Codes- Check sum- Forward Error correction –Data Link Layer Protocols- Automatic Repeat (ARQ) protocols -Stop and Wait, Go-back-N, Selective Repeat, HDLC, PPP</p> <p>Medium Access Control - Random Access Protocols -CSMA/CD, CSMA/CA, Channelization -FDMA-TDMA-CDMA, Wired LANs: IEEE Project 802.3, IEEE 802.4 - IEEE 802.5, Wireless LAN- IEEE Project 802.11, WiMAX -IEEE Project 802.16</p> <p>Introduction – Network-Layer Services- Packet Switching- Network-Layer Performance- IPv4 Addresses – Internet Protocol (IP)- IPV4 , ICMP V4, ARP, IPv6 , Subnetting</p> <p>Routing</p> <p>Introduction - Routing</p>		
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		<p>Algorithms- Distance Vector Routing, Link State Routing, Path Vector Routing, Unicast Routing Protocols- RIP, OSPF, BGP -NAT</p> <p>Unit-4 Transport Layer - Proposed</p> <p>Transport Layer Protocols- UDP</p> <p>Introduction - Services, Port Numbers, User Datagram Protocol- User Datagram, UDP Services, UDP Applications</p> <p>Transport Layer Protocols TCP, SCTP</p> <p>Transmission Control Protocol- TCP Services, TCP features- TCP Connection- TCP Congestion control - SCTP - SCTP Services, SCTP Features , Packet Format, Flow Control To Improve Qos</p> <p>Unit-5 APPLICATION LAYER -Proposed</p>		
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		<p>Application Layer</p> <p>Introduction - DNS- SMTP- DHCP- FTP- HTTP-Telnet</p> <p>Cryptography and Network Security- Security Goals- Attacks- Confidentiality - Concepts of symmetric and asymmetric key cryptography-RSA, Sharing of symmetric keys - Diffie Hellman - Firewalls.</p> <p>Foundations of Modern Networking- Introduction: Software Defined Networking - SDN Architecture, Virtualization, The Internet of Things- Components.</p>		
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Semester: VI

Course: Compiler Design

Course Code: CS632P/CSE532

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
UNIT-1	Unit-1 INTRODUCTION TO COMPILERS Translators-Compilation and Interpretation-Language	Unit-1 INTRODUCTION TO COMPILERS	Based on stakeholders feedback and Suggestion given by Program and Course	Applicable for Batch 2023,2022 and 2021

	<p>processors -The Phases of Compiler-Errors encountered in Different Phases-The Grouping of PhasesCompiler Construction Tools - Programming Language basics.</p> <p>Unit-2 LEXICAL ANALYSIS Need and Role of Lexical Analyzer-Lexical Errors-Expressing Tokens by Regular Expressions- Converting Regular Expression to DFA-Minimization of DFA-Language for Specifying LexicalAnalyzers-LEX-Design of Lexical Analyzer for a sample Language.</p> <p>Unit-3 SYNTAX ANALYSIS Need and Role of the Parser-Context Free Grammars -Top Down Parsing -General Strategies- Recursive Descent Parser Predictive Parser-LL(1) ParserShift Reduce Parser-LR Parser-LR (0)Item-Construction of SLR Parsing Table -Introduction to LALR Parser - Error Handling and Recovery inSyntaxAnalyzer-YACC-Design of a syntax Analyzer for a Sample Language</p>	<p>Introduction- Structure of a compiler – Lexical Analysis – Role of Lexical Analyzer – The Phases of Compiler-Grouping of the phases - Errors in different phases - Input Buffering – Specification of Tokens – Recognition of Tokens – Lex – Finite Automata – Regular Expressions to Automata – Minimizing DFA.</p> <p>Unit-2 SYNTAX ANALYSIS</p> <p>Role of Parser – Grammars – Error Handling – Context-free grammars – Writing a grammar – Top Down Parsing – Recursive Descent Parser - Predictive Parser - Bottom Up Parser - SR Parser , LR Parser - SLR – CLR - LALR– Error Handling and Recovery in Syntax Analyzer- Case study : YACC</p>	Coordinator	
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	<p>Unit-4 SYNTAX DIRECTED TRANSLATION & RUN TIME ENVIRONMENT Syntax directed Definitions- Construction of Syntax Tree- Bottom-up Evaluation of S- Attribute Definitions- Design of predictive translator - Type Systems Specification of a simple type checker- Equivalence of Type Expressions-Type Conversions.</p> <p>RUN-TIME ENVIRONMENT: Source Language Issues- Storage Organization Storage Allocation- Parameter Passing- Symbol Tables-Dynamic Storage Allocation-Storage Allocation in FORTAN.</p> <p>Unit-5 CODE OPTIMIZATION AND CODE GENERATION Principal Sources of Optimization-DAG- Optimization of Basic Blocks- Global Data Flow Analysis- Efficient Data Flow Algorithms-Issues in Design of a Code Generator - A Simple Code Generator Algorithm.</p>	<p>Unit-3 INTERMEDIATE CODE GENERATION</p> <p>Syntax Directed Definitions, Evaluation Orders for Syntax Directed Definitions, Intermediate Languages: Syntax Tree, Three Address Code, Types and Declarations, Translation of Expressions, Type Checking.</p> <p>Unit 4 RUN-TIME ENVIRONMENT AND CODE GENERATION</p> <p>Storage Organization, Stack Allocation Space, Access to Non-local Data on the Stack, Heap Management – Issues in Code Generation – Design of a simple Code Generator - Incremental Design: A Case Study of a compiler</p> <p>Unit-5 CODE OPTIMIZATION</p> <p>Principal Sources of Optimization – Peep-</p>		
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		hole optimization – DAG- Optimization of Basic Blocks-Global Data Flow Analysis – Efficient Data Flow Algorithm.		
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Semester: VI

Course: Internet of Things

Course Code: CS631P

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
3	IoT Architecture Web of Things versus Internet of Things - Two Pillars of the Web - Unified Multitier WoT Architecture, Cloud Providers and Systems, The Cloud of Things Architecture. IoT Protocols: Application Protocols, Service Discovery Protocols, Infrastructure Protocols,	Title 3: IoT Architecture Web of Things versus Internet of Things - Two Pillars of the Web - Unified Multitier WoT Architecture, Cloud Providers and Systems, The Cloud of Things Architecture. IoT Protocols: Application Protocols, Service Discovery Protocols, Infrastructure Protocols, IoT Data Link Protocols, Network Layer Routing Protocols, Network Layer Encapsulation Protocols, Session Layer Protocols.		

Semester: VII

Course: Database Administration

Course Code: CS744E02

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
UNIT-5	<p>Overview of extraction loading and Transformation, Loading Data: Using the SQL Loader Utility, Using External Tables to Load Data. Overview of Common Techniques used for Transforming Data, Introduction to Data Pump Technology - Benefits, Uses and Components of Data Pump. Access method, Data Pump Files, Privileges, Mechanics of Data Pump Job. Backing Up Oracle Databases: Backup Terms, Guidelines, Strategies, Examining Flash Recovery Area - benefits of Flash recovery Area, Looking into Flash Recovery Area, Setting size of Flash Recovery Area Creating Flash Recovery Area, Backing up Flash Recovery Area, RMAN - Benefits, Architecture, Connecting to RMAN.</p>	<p>Data Loading, Backup & Recovery & Database Performance Tuning Overview of extraction loading and Transformation, Loading Data: Using the SQL Loader Utility, Using External Tables to Load Data. Overview of Common Techniques used for Transforming Data, Introduction to Data Pump Technology - Benefits, Uses and Components of Data Pump. Access method, Data Pump Files, Privileges, Mechanics of Data Pump Job. Backing Up Oracle Databases: Backup Terms, Guidelines, Strategies, Examining Flash Recovery Area - benefits of Flash recovery Area, Looking into Flash Recovery Area, Setting size of Flash Recovery Area Creating Flash Recovery Area, Backing up Flash Recovery Area, RMAN</p>	<p>To accommodate recent industry based concepts</p>	<p>Applicable for 2022,2021,2020</p>

	<p>SQL Query Optimization: Approach to Performance Tuning, Optimizing Oracle Query Processing, Cost-based Optimizer, Drawbacks of CBO. SQL Performance Tuning Tools - EXPLAIN PLAN, Autotrace, SQL Trace and TKPROF. Tuning the instance: Introduction, Automatic Tuning vs. Dynamic Views. Tuning Oracle Memory: Tuning Shared Pool - Library Cache, Dictionary Cache, Hard vs. Soft Parsing, Sizing Shared Pool, Tuning Buffer Cache - Sizing buffer Cache, Multiple pools for Buffer Cache, Tuning Large, Streams and Java Pools. Introduction to iSQL*Plus: Installation, configuration, Starting and Stopping iSQL*Plus, Logging into and</p>	<p>- Benefits, Architecture, Connecting to RMAN. SQL Query Optimization: Approach to Performance Tuning, Optimizing Oracle Query Processing, Cost-based Optimizer, Drawbacks of CBO. SQL Performance Tuning Tools - EXPLAIN PLAN, Autotrace, SQL Trace and TKPROF. Tuning the instance: Introduction, Automatic Tuning vs. Dynamic Views.</p> <p>Introduction to iSQL*Plus: Installation, configuration, Starting and Stopping iSQL*Plus, Logging into and disconnecting from iSQL*Plus. Case study.</p>		
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	disconnecting from iSQL*Plus. Case study.			
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Semester: VII

Course: Research Methodology

Course Code: CS744E05

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
Unit-5	Unit-5 INTERPRETATION AND REPORT WRITING Meaning Of Interpretation, Technique of Interpretation: Precaution in Interpretation, Significance of Report Writing, Different Steps in Writing Report, Layout of the Research Report, Types of Reports, Oral Presentation, Mechanics of Writing a Research Report, Precautions for Writing a Research Report, Case study.	Unit-5 INTERPRETATION AND REPORT WRITING Meaning Of Interpretation, Technique of Interpretation: Precaution in Interpretation, Significance of Report Writing, Different Steps in Writing Report, Layout of the Research Report, Types of Reports, Oral Presentation, Mechanics of Writing a Research Report, Precautions for Writing a Research Report, Research report writing using Latex. Case study.	Suggestion given by Program and Course Coordinator	Applicable for 2022,2021,2020

Semester: VII

Course: Simulation and Modeling

Course Code: CS743E03

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
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Unit-3	Unit-3 DESIGN OF SIMULATION EXPERIMENTS Problem formulation, data collection and reduction, time flow mechanism, key variables, logic flow chart, starting condition, run size, experimental design consideration, output analysis and interpretation validation.	Unit-3 DESIGN OF SIMULATION EXPERIMENTS : Problem formulation, data collection and reduction, time flow mechanism, key variables, logic flow chart, starting condition, run size, experimental design consideration, Splitting and Sampling Techniques, output analysis and interpretation validation	To accommodate recent industry based concepts	Applicable for 2022,2021,2020
Unit-4	Unit-4 SIMULATION LANGUAGES Comparison and selection of simulation languages, study of anyone simulation language.	Unit-4 Systems Models : Deep learning models like ANN and CNN Models and Reinforcement learning models		

Semester: VIII

Course: Grid Computing

Course Code: CS745E04

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
Unit 1	.	Comparison of Grid Computing and Cloud Computing	To accommodate recent industry based concepts	Applicable for 2022,2021,2020

Semester: VIII

Course: Quantum Computing

Course Code: CS745E01

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
Unit 1	Unit-1 FUNDAMENTAL CONCEPTS Global Perspectives, Quantum Bits, Quantum Computation, Quantum Information, Quantum Circuits - Universal Quantum Gates - Postulates of Quantum Mechanisms.	Title 1 : Fundamental Concepts Global Perspectives, Linear algebra and Dirac notation, , Quantum Bits, Quantum Computation, Properties of Quantum Algorithms, Quantum Information, Postulates of Quantum Mechanisms. Experiment 1: Implementation of superposition, interference and entanglement	To accommodate recent industry based concepts and based on stakeholders feedback	Applicable for 2022,2021,2020
Unit 2	Unit-2 QUANTUM COMPUTATION Quantum Circuits - Quantum algorithms, Single Orbit operations, Control Operations, Measurement, Universal Quantum Gates, Simulation of Quantum Systems, Quantum Fourier transform, Phase estimation,	Title 2: Quantum Computation Quantum Gates and Quantum Circuits, Quantum States, Representation of Quantum States, Control Operations, Measurement, Simulation of Quantum Systems, Quantum Fourier transform, Quantum Phase estimation, Quantum	To accommodate recent industry based concepts and based on stakeholders feedback	Applicable for 2022,2021,2020

	Applications, Quantum search algorithms - Quantum counting - Speeding up the solution of NP - complete problems - Quantum Search for an unstructured database.	search algorithms, Quantum counting Algorithms, Models of Computation, Analysis of Computational Problems. Experiment 1: Grover's Search Algorithms		
	Unit-3 QUANTUM COMPUTERS Guiding Principles, Conditions for Quantum Computation, Harmonic Oscillator Quantum Computer, Optical Photon Quantum Computer - Optical cavity Quantum electrodynamics, Ion traps, Nuclear Magnetic resonance.	Title 3: Quantum Information Classical Noise and Markov Processes, Quantum noise and Quantum Operations - Representations, Examples, Applications of Quantum operations, Limitations of the Quantum operations formalism, Distance Measures for Quantum information. Experiment 2: Quantum Random Number Generation	To accommodate recent industry based concepts and based on stakeholders feedback	Applicable for 2022,2021,2020
	Unit-4 QUANTUM INFORMATIONS Quantum noise and Quantum Operations -	Title 4: Quantum Error Correction Introduction, The Shor code, Theory of	To accommodate recent industry based concepts and based on stakeholders feedback	Applicable for 2022,2021,2020

	<p>Classical Noise and Markov Processes, Quantum Operations, Examples of Quantum noise and Quantum Operations - Applications of Quantum operations, Limitations of the Quantum operations formalism, Distance Measures for Quantum information.</p>	<p>Quantum Error - Correction, Constructing Quantum Codes, Stabilizer codes, Fault - Tolerant Quantum Computation, Entropy and information - Shannon Entropy, Basic properties of Entropy, Von Neumann, Strong Sub Additivity, Data Compression, Entanglement as a physical resource. Case study.</p> <p>Experiment 3: Constructing Quantum Codes for encoding and decoding information</p>		
	<p>Unit-5 QUANTUM ERROR CORRECTION Introduction, Shor code, Theory of Quantum Error -Correction, Constructing Quantum Codes, Stabilizer codes, Fault - Tolerant Quantum Computation, Entropy and information - Shannon Entropy, Basic properties of Entropy, Von Neumann, Strong</p>	<p>Title 5: Quantum Cryptography Classical Cryptography - Symmetrical Cryptosystem, Asymmetrical Cryptosystem, Quantum Key Distribution - No-Cloning Theorem, The BB84 Protocol, The Ekert Protocol, Real-World Implementation - Polarisation Encoding,</p>	<p>To accommodate recent industry based concepts and based on stakeholders feedback</p>	<p>Applicable for 2022,2021,2020</p>

	Sub Additivity, Data Compression, Entanglement as a physical resource. Case study.	Polarisation Entanglement, The "Venus von Willendorf" Experiment. Experiment 5: Quantum Key Distribution		
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Semester: 6

Course: Soft Computing

Course Code: AIML634

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
Unit 3	Unit-3 OPTIMIZATION ALGORITHMS What is an Algorithm? Newton's Method, Formulation of Optimization Problems, Optimization Algorithms: Gradient-Based Algorithms and Hill Climbing with Random Restart, Search for Optimality, No-Free-Lunch Theorems, Nature-Inspired Metaheuristics, A Brief History of Metaheuristics. Analysis of Optimization Algorithms: Exploration and	Unit 3: OPTIMIZATION ALGORITHMS No-Free-Lunch Theorems, Nature-Inspired Algorithms, A Brief History of Metaheuristics. Analysis of Optimization Algorithms: Exploration and Exploitation. Classification of Nature-Inspired Algorithms.	Suggestion given by Program and Course Coordinator	Applicable for Batch 2022

	Exploitation			
Unit 5	Unit 5: APPLICATIONS Intelligent Image Color Reduction and Quantization, Minimum Spanning Tree, Robot Path Planning, Data Envelopment Analysis, Portfolio Optimization, Facility Layout Design, Vehicle Routing Problem, Parallel Machine Scheduling, Bin Packing Problem and Assignment problem.	Unit 5: Evolutionary and Bio-inspired Algorithms Genetic Algorithm, Differential evolution, Biogeography-based optimization, Shuffled frog leaping algorithm. Course Project: A substantial project work for applying these algorithms for any data science problem.	Suggestion given by Program and Course Coordinator	Applicable for Batch 2022

Semester: VI

Course: Business Intelligence

Course Code: DS634

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
UNIT-5	Unit-5 WORKING WITH BI TOOLS Overview of managerial, strategic and technical issues associated with Business Intelligence and Data Warehouse design, implementation, and utilization. Critical issues in planning, physical design process, deployment	Unit 5: HR & SUPPLY CHAIN ANALYTICS Human Resources - Planning and Recruitment - Training and Development - Supply chain network - Planning Demand, Inventory and Supply - Logistics - Analytics applications in HR & Supply Chain, Customer Behavior,	To accommodate recent industry based concepts	Applicable for 2022-2026

	and on going maintenance. Dash Boards and Scorecards Creation, Case study on the specific data set in BI tools	Analytics applications in Marketing and Sales		
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Semester: 5

Course: Introduction to IOT

Course Code: IOT531P

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
3	IoT Architecture Web of Things versus Internet of Things - Two Pillars of the Web - Unified Multitier WoT Architecture, Cloud Providers and Systems, The Cloud of Things Architecture. IoT Protocols: Application Protocols, Service Discovery Protocols, Infrastructure Protocols,	Title 3: IoT Architecture Web of Things versus Internet of Things - Two Pillars of the Web - Unified Multitier WoT Architecture, Cloud Providers and Systems, The Cloud of Things Architecture. IoT Protocols: Application Protocols, Service Discovery Protocols, Infrastructure Protocols, IoT Data Link Protocols, Network Layer Routing Protocols, Network Layer Encapsulation Protocols, Session Layer Protocols.	To accommodate recent industry based concepts	Applicable for 2021 and 2022 Batch

Semester: 6

Course: Advance IOT (IIOT, IOMT, and BIOT)

Course Code: IOT631P

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
1	<p>Advanced IoT and Cloud : Internet of Things and Data Analytics in the Cloud with Innovation and Sustainability Introduction, The IoT and the Fourth Industrial Revolution, Internet of Things Technology, Standards and Protocols, IoT Ecosystem 11, Definition of Big Data, IoT, Data Analytics, and Cloud Computing, Creativity, Invention, Innovation, and Disruptive Innovation, Polya’s “How to Solve it”, Business Plan and Business Model, Conclusion and Future Perspective Digital Services and Sustainable Solutions Introduction, Why IoT is not Just “Nice to Have”, Services in a Digital Revolution, Mobile Digital Services and the Human Sensor, Not Just Another App, The Hidden Life of Things, The Umbrellas are not what they Seem, Interacting with the Invisible, Society as Open Source, Learn from your Hackers, Ensuring High-Quality Services to Citizens, Government as a Platform, Conclusion</p>	<p>Introduction to IOT, Definition of IIOT, IOT Vs. IIOT, History of IIOT, Components of IIOT - Sensors, Interface, Networks, Key terms - IOT Platform, Interfaces, API, clouds, Data Management Analytics, Mining & Manipulation, IOT components, Various Architectures of IOT and IIOT, Advantages & disadvantages, Industrial Internet - Reference Architecture; IIOT System components: Sensors, Gateways, Routers, Modem, Cloud brokers, servers and its integration, WSN, WSN network design for IOT.</p>	<p>To accommodate recent industry based concepts</p>	<p>Applicable for 2021 and 2022 Batch</p>
	<p>Industrial Internet of Things (IIoT) : The Industrial Internet of Things (IIoT): Applications and Taxonomy Introduction to the IIoT , Some</p>	<p>Introduction to sensors, Roles of sensors in IIOT, Various types of sensors, Design of</p>	<p>To accommodate recent industry based concepts</p>	<p>Applicable for 2021 and 2022 Batch</p>

2	<p>Examples of IIoT Applications , Toward a Taxonomy of the IIoT, Standards and Protocols for Connectivity , Connectivity Architecture for the IIoT, Data- Centricity Makes DDS Different, The Future of the IIoT Strategic Planning for Smarter Cities Introduction, What is a Smart City?, Smart Cities and the Internet of Things , Why Strategic Planning Matters, Beginning the Journey: First Things First, From Vision to Objectives to Execution, Pulling it all Together</p>	<p>sensors, sensor architecture, special requirements for IIOT sensors, Role of actuators, types of actuators. Need of protocols; Types of Protocols, Wi-Fi direct, Zigbee, Z wave, BACNet, BLE, Modbus, SPI, I2C,NFC, IIOT protocols -COAP, MQTT, 6lowpan, lwm2m, AMPQ.</p>		
3	<p>Internet of Medical Things (IoMT) : Next-Generation Learning: Smart Medical Team Training Introduction , Learning, Analytics, and Internet of Things, IoT Learning Design Process, Conclusion. The Brain- Computer Interface in the Internet of Things Introduction , The Science Behind Reading the Brain, The Science of Writing to the Brain , The Human Connectome Project, Summary IoT Innovation Pulse The Convergence of Exponential Technologies as a Driver of Innovation , Six Dimensions of the Pleco system, Five Principles of the Pleco system , The Biologic Organism Analogy for the IoT, Components for Innovation with the</p>	<p>IIoT, Different Classes of Analytics, IIoT Analytics Technologies, Building IIoT Analytics, Understanding the Role of Infrastructure deploying Analytics, OSA Analytics and Practices, Working with MS Azure, ML Service.</p>	<p>To accommodate recent industry based concepts</p>	<p>Applicable for 2021 and 2022 Batch</p>

	Organismal Analog, Spinozan Value Trade- Offs, Human IoT Sensor Networks, Role of the IoT in Social Networks, Security and Cyberthreat Resilience, IoT Optimization for Sustainability of our Planet, Maintenance of Complex IoT Networks , The Accordion Model of Learning as a Source of Innovation			
4	Internet of Wearable Things (IoWT), IPv6 for IoT and Gateway A Designer’s Guide to the Internet of Wearable Things Introduction, Interface Glanceability, The Right Data at the Right Time, Consistency Across Channels, From Public to Personal, Nonvisual UI, Emerging Patterns, Conclusion. IPv6 for IoT and Gateway Introduction, IP: The Internet Protocol, IPv6: The Next Internet Protocol, 6LoWPAN: IP for IoT , Gateways: A Bad Choice, Example IoT Systems, An IoT Data Model, The Problem of Data Ownership, Managing the Life of an IoT Device, Conclusion: Looking forward.	Introduction to web security, Conventional web technology and relationship with IIOT, Vulnerabilities of IoT, Privacy, Security requirements, Threat analysis, Trust, IoT security tomography and layered attacker model, Identity establishment, Access control, Message integrity, Non-repudiation and availability	To accommodate recent industry based concepts	Applicable for 2021 and 2022 Batch
5	BIOT and SCADA : Beacon Technology with IoT and Big Data Introduction to Beacons , What is Beacon Technology, Beacon and BLE Interaction , Where Beacon	What are IoMT and its working? Tracking assets and resources, Internet of things in hospitals, collection and	To accommodate recent industry based concepts	Applicable for 2021 and 2022 Batch

	Technology can be Applied/Used, Big Data and Beacons, San Francisco International Airport (SFO), Future Trends and Conclusion SCADA Fundamentals and Applications in the IoT Introduction, What Exactly is SCADA?, Why is SCADA the Right Foundation for an IoT Platform?, Case Study: Algae Lab Systems, The Future of SCADA and the Potential of the IoT	integration of clinical data, Major benefits of IoT in healthcare, Disadvantages of IoT in healthcare, Home Monitoring System for Aged Care, Smart Medicinal Packages for Medication Adherence, Smart Drug Delivery System for Automated Drug Dispensation, Connected Rural Healthcare Consultation, Population and Environment Monitoring of Infectious Diseases.		
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Semester: 6

Course: IoT Analytics and security

Course Code: IOT632P

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
4	Data Analytics in Smart Buildings Introduction, Addressing Energy Efficiency in Smart Buildings, A proposal of general architecture for management systems of smart buildings, IoT based system for Energy Efficiency in Smart Buildings, Evaluation and Results	Unit 1,2,3 is catered to Analytics and unit 4,5 catered to security aspects(Cryptography and Network Security)	To accommodate recent industry based concepts	Applicable for 2021 and 2022 Batch

5	Introduction, Cloud based IoT Analytics, Cloud based city platform, New challenges towards Edge based solutions, Edge based IoT Analytics, Use case of Edge based data analytics	Unit 1,2,3 is catered to Analytics and unit 4,5 catered to security aspects(Cryptography and Network Security)	To accommodate recent industry based concepts	Applicable for 2021 and 2022 Batch
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Semester: 1

Course: Mathematical and Statistical Skills for Data Science

Course Code:MTDS133

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
1-5	New	<p>Course Description:</p> <p>This course is an introduction to the field of statistics and how engineers use statistical methodology as part of the engineering problem-solving process. Mathematical and Statistical Skills for Data Science Course aligns with LRNG (√) / Skill Develop (√) / Entrup / Emplayobilty (√) / Cross Cutting Needs .</p>	As per stakeholders recommendation	2023

Semester:1

Course:Business intelligence and its applications

Course Code:MTDS134

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
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1-5	New	Course Description: This course elaborates on the basics of business intelligence concepts and the knowledge delivery. Students shall also examine the efficacy and the business applications in the real world.	As per stakeholders recommendation	2023
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Semester:2

Course:Optimization Techniques for Data Science

Course Code:MTDS232

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
1-5	New	Course Description: Introduction to optimization techniques use both linear and nonlinear programming. The focus of the course is on convex optimization though some techniques will be covered for non-convex function optimization too. After an adequate introduction to linear algebra and probability theory, students will learn to frame engineering minima	As per stakeholders recommendation	2023

		maxima problems in the framework of optimization problems .		
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Semester:2

Course: Optimization Techniques Lab

Course Code:MTDS252

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
1-5	New	Course Description: Optimization techniques use both linear and nonlinear programming. The focus of the course is on convex optimization though some techniques will be covered for non-convex function optimization too. After an adequate introduction to linear algebra and probability theory, students will learn to frame engineering minima maxima problems in the framework of optimization problems.	As per stakeholders recommendation	2023

Semester:2

Course:Stochastic Processes and Queuing Theory

Course Code:MTDS241E03

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
1-5	New	Course Description: This course gives a detailed introduction into queueing theory along with the stochastic processes techniques useful for modeling queueing systems. A queue is a waiting line, and a queueing system is a system which provides service to some jobs (customers, clients) that arrive with time and wait to get served (Examples: - a telecommunication system that processes requests for communication; - a hospital facing randomly occurring demand for hospital beds; - central processing unit that handles arriving jobs)	As per stakeholders recommendation	2023

Semester:2

Course:Cognitive Science

Course Code:MTDS241E04

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
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1-5	New	Course Description: Cognitive Science is the science of mind and brain. In this course we study the history of Cognitive Science followed by developing a Unified Framework among different disciplines. We also see the way the mind is organized and the model of information processing in mind.	As per stakeholders recommendation	2023
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Semester:2

Course:Predictive Analytics for Internet of Things

Course Code:MTDS242E01

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
1-5	New	Course Description: The Predictive Analytics for IoT course provides students with the knowledge and skills to analyze IoT data using advanced predictive analytics techniques. The course covers the fundamentals of IoT and predictive analytics including data acquisition, preprocessing and Visualization.The course will also equip	As per stakeholders recommendation	2023

		the students with the necessary skills to pursue a career in data analytics, IoT and related fields.		
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Semester:2

Course:Computational Linear Algebra

Course Code:MTDS242E05

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
1-5	New	Course Description: In this course you will investigate fundamental concepts of linear algebra and explore their application to problems arising from mathematics, applied mathematics, and other fields.	As per stakeholders recommendation	2023

Semester:3

Course:Graphs Algorithms and Mining

Course Code:MTDS341E01

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
1-5	New	Course Description: This course "Graph Algorithm and Mining" will be helpful to understand some recent trends in Deep Learning technology based on Graph theory, for example, GNN, GAT etc. This course	As per stakeholders recommendation	2023

		provides depth knowledge of Graph theory as well as its application on computer vision tasks.		
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Semester:3

Course:Business Analytics

Course Code:MTCS361OE03

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
1-5	New	<p>Course Description: This course is a source of information that can be used to teach business intelligence in one semester. It will be a good place to start for people who are learning for the first time, especially those in engineering and management. You can't just study one part of Business Intelligence. The subject gives a complete look at BI, starting with an enterprise context and going on to explain how to use tools to learn more. It also talks about a few areas where BI is used and the problems it can help solve. It covers the whole life cycle of a</p>	As per stakeholders recommendation	2023

		BI/Analytics project, including operational/transactional data sources, data transformation, data mart/warehouse design-build, analytical reporting, and dashboards.		
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Semester: I

Course: Advanced Database Systems

Course Code: MTCS133

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
Title 1 : Introduction to DBS	New course	Database Management systems Application of DBMS, Advantages of DBMS-ER model, Components of E-R diagram, Cardinality - Relational databases, Converting ER Diagram into Relations/Tables.	As per recommendation and need of the hour	2023
Title 2: Normalization: Database Design Theory		Introduction to Normalization using Functional and Multivalued Dependencies: Informal design guidelines for relation schema, Functional Dependencies, Normal Forms based on Primary Keys, Second and Third Normal Forms	As per recommendation and need of the hour	2023
Title 3: SQL :		Simple queries in SQL, queries involving more than one relation, sub queries, full relational operations, Database modifications, defining a relational	As per recommendation and need of the hour	2023

		schema in SQL, view definitions.		
Title 4: Constraints and Triggers:		Keys and foreign keys, constraints on attributes and tuples, modification of constraints, schema level constraints and Triggers.	As per recommendation and need of the hour	2023
Title 5: Transaction Processing		<p>Transaction Processing: Introduction to Transaction Processing, Transaction and System concepts, Desirable properties of Transactions, Characterizing schedules based on recoverability, Characterizing schedules based on Serializability, Transaction support in SQL.</p> <p>Concurrency Control in Databases: Two-phase locking techniques for Concurrency control, Concurrency control based on Timestamp ordering, Multiversion Concurrency control techniques, Validation Concurrency control techniques, Granularity of Data items and Multiple Granularity Locking.</p> <p>Recovery Concepts, NO-UNDO/REDO recovery based on Deferred update, Recovery techniques based on immediate update, Shadow paging, Database backup and recovery from catastrophic failures.</p>	As per recommendation and need of the hour	2023
Title 6: Object-Orientation in Query Languages:		Introduction to OQL, Additional Forms of OQL Expressions, Object Assignment and Creation in OQL, User-Defined Types in SQL, Operations on Object-Relational Data.	As per recommendation and need of the hour	2023

Semester:I

Course: Advanced Data Science

Course Code: MTCS135

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
Title 1 : INTRODUCTION AND THE DATA SCIENCE	New Course	Data science process - roles, stages in data science project - working with data from files -relational and Non-Relational databases - exploring data - managing data - cleaning and sampling for modeling and validation - Data preprocessing-Statistics for Data Science-Data Distributions.	As per recommendation and need of the hour	2023
Title 2: MODELING METHODS		Choosing and evaluating models - mapping problems to machine learning, evaluating clustering models, validating models - cluster analysis - K-means algorithm unsupervised methods. , Naïve Bayes - Memorization Methods - Linear and logistic regression - unsupervised methods.	As per recommendation and need of the hour	2023
Title 3: ANALYTICS WITH PYTHON		Data Analysis with Numpy and Pandas - Visualization with Seaborn Matplotlib, Plotly and Cufflinks - Scikit -learn - Regression, KNN, PCA and SVM in Python- Recommender systems - NLP with NLTK - Neural Nets and Deep Learning with Tensor Flow	As per recommendation and need of the hour	2023
Title 4: SPARK SYSTEMS		Introduction -Hadoop vs Spark - Spark Data Frame - Group by and Aggregate - RDD(Resilient Distributed Datasets) -	As per recommendation and need of the	2023

		Spark SQL - Spark Running on Cluster- Machine Learning with Mlib- Collaborative Filtering-NLP Applications-Spark Streaming.	hour	
Title 5: Convolutional Neural Networks		CNN Architectures - Convolution - Pooling Layers - Transfer Learning - Image Classification using Transfer Learning - Recurrent and Recursive Nets - Recurrent Neural Networks - Deep Recurrent Networks - Recursive Neural Networks - Applications.	As per recommendation and need of the hour	2023

Semester: I

Course: Advanced Database Systems Lab

Course Code: MTCS152

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
Title1:	New Course	Study of all SQL commands	As per recommendation and need of the hour	2023
Title2:		Study of all SQL commands	As per recommendation and need of the hour	2023
Title3:		Study of all SQL commands	As per recommendation and need of the hour	2023
Title4:		Implementation of PL/SQL Programs.	As per recommendation and need of the hour	2023
Title5:		Implementation of PL/SQL Programs.	As per recommendation and need of the hour	2023
Title6:		Implementation of PL/SQL Programs.	As per recommendation and need of the hour	2023
Title7:		Implementation of Cursor, Trigger.	As per recommendation and need of the hour	2023

Semester: II

Course:Data and Web Analytics

Course Code: MTCS232

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
Title 1 : Introduction to Data and Web Analytics	New Course	Introduction, It's All About Data , Data Analytics, Data Mining, and Knowledge Discovery, Data and Relations, The Iris Data Set, Data Scales, Set and Matrix Representations , Relations , Dissimilarity Measures , Similarity Measures , Sequence Relations, Sampling, and Quantization. Differences between Data Analytics and Web Analytics, Case Study - Web Analytics , Current Landscape and Challenges , Web Analytics Fundamentals, Capturing Data , Selecting Optimal Web Analytics Tool , Understanding Clickstream Data Quality , Implementing Best Practices , Apply the "Three Layers of So What" Test	As per recommendat ion and need of the hour	2023
Title 2: Data Preprocessing and web analytics data collection		Data Preprocessing-Error Types, Error Handling, Filtering Data Transformation , Data Integration , Problems , Data Visualization Diagrams , Principal Component Analysis, Multidimensional Scaling , Sammon Mapping , Auto-encoder, Histograms , Spectral Analysis , Case Study web analytics Data Collection – Importance and Options Understanding the Data Landscape , Clickstream Data , Outcomes Data , Research Data , Competitive Data	As per recommendat ion and need of the hour	2023
		Correlation , Linear Correlation , Correlation and Causality , Chi-Square	As per recommendat	2023

Title 3: Correlation and Regression		Test for Independence, Problems , Regression , Linear Regression , Linear Regression with Nonlinear Substitution , Robust Regression , Neural Networks, Radial Basis Function Networks , Cross-Validation , Feature Selection , Problems	ion and need of the hour	
Title 4: Forecasting , Classification and Clustering		Forecasting , Finite State Machines , Recurrent Models , Autoregressive Models Problems and Use cases, Classification , Classification Criteria ,Naive Bayes Classifier ,Linear Discriminant Analysis , Support Vector Machine , Nearest Neighbor Classifier, Learning Vector Quantization , Decision Trees , Problems	As per recommendation and need of the hour	2023
Title 5: Clustering		Clustering , Cluster Partitions , Sequential Clustering , Prototype-Based Clustering , Fuzzy Clustering , Relational Clustering ,Cluster Tendency Assessment , Cluster Validity , Self-organizing Map, Problems and Use cases , Case study related to Web Analytics perspective of Creating a Data-Driven Culture – Practical Steps and Best Practices , Key Skills to Look for in a Web Analytics Manager/Leader	As per recommendation and need of the hour	2023

Semester: II

Course: Network Security Lab

Course Code: MTCS251

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
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Experiment 1:	New Syllabus	Implement the following algorithms a) DES b) RSA Algorithm	As per recommendation and need of the hour	2023
Experiment 2:		Implement the following algorithms Diffie-Hellman , MD5 , SHA-1	As per recommendation and need of the hour	2023
Experiment 3:		Fire wall implementation using different security requirements	As per recommendation and need of the hour	2023
Experiment 4:		Demonstrate intrusion detection system (ids) using any tool (snort or any other s/w)	As per recommendation and need of the hour	2023
Experiment 5:		Implement some simple filtering rules based on IP and TCP header information	As per recommendation and need of the hour	2023

Semester: II

Course: Data and Web Analytics Lab

Course Code: MTCS252

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
Title 1 :	New Syllabus	Hands-on experiments about Data and Web Analytics fundamentals using python /matlab / R	As per recommendation and need of the hour	2023
Title 2:		Hands-on experiments about data Preprocessing and web analytics data collection	As per recommendation and need of the hour	2023
		Hands-on experiments about Correlation and	As per	2023

Title 3:		Regression	recommendation and need of the hour	
Title 4:		Hands-on experiments about Forecasting, Classification and Clustering	As per recommendation and need of the hour	2023
Title 5:		Hands-on experiments about Clustering	As per recommendation and need of the hour	2023

Semester: II / PEC II
Course:IoT Architecture and Computing
Course Code: MTCS242E01

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
	New Course	Course Description:	As per recommendation and need of the hour	2023

Semester: II / PEC II
Course: Digital Image Forensics
Course Code: MTCS242E05

Unit	Existing Syllabus	Proposed Syllabus	Reasons for Change	Remarks
All the Units	New Course	prerequisite as DIP, This course will cater to advance image processing and digital forensic	As per recommendation and need of the hour	2023

Semester: III/PEC-III
Course: MTCS341E02
Course Code: Advanced Cognitive Science

Unit	Existing	Proposed Syllabus	Reasons for	Remarks
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	Syllabus		Change	
Title 1 : Introduction	New course	What is Cognitive Science, Representation, Computation, Interdisciplinary Perspective	As per recommendation and need of the hour	2023
Title 2: The Big Picture: Bridging The Science And Technology For The Decision Maker		Introduction and Study Origin, What Decision Makers Want to Know	As per recommendation and need of the hour	2023
Title 3: Current Cognitive Neuroscience Research And Technology: Selected Areas Of Interest		Introduction, Challenges to the Detection of Psychological States and Intentions via Neurophysiological Activity, Neuropsychopharmacology, Functional Neuroimaging	As per recommendation and need of the hour	2023
Title 4: Emerging Areas Of Cognitive Neuroscience And Neurotechnologies		Introduction, Computational Biology Applied to Cognition, Functional Neuroimaging, Genomics, and Proteomics, Distributed Human-Machine Systems	As per recommendation and need of the hour	2023
Title 5: Cultural And Ethical Underpinnings Of Social Neuroscience		Introduction, Cultural Underpinnings of Social Neuroscience, Ethical Implications of Cognitive Neuroscience and Related Technologies	As per recommendation and need of the hour	2023
Title 6: Potential Intelligence And Military Applications Of Cognitive Neuroscience		Introduction, Market Drivers of Cognitive Neuroscience and Related Technologies as Indicators of the Demand for COTS Technologies, Technology Assessments:	As per recommendation and need of the hour	2023

And Related Technologies		Neuropsychopharmacology, Technology Assessments: Distributed Human-Machine Systems and Computational Biology, Findings and Recommendation		
Title 7: Robotics : The Ultimate Intelligent Agents		Introduction, Some Robotic Achievements, Evaluating Robotic Potentials, Biological and Behavioral Foundations of Robotic Paradigms, Foundations of Robotic Paradigms, Robotic Paradigms, Overall Evaluation of Robots as Ultimate Intelligent Agents, In Depth: Autonomous Robot Architecture (AuRA), Minds On Exercise: Relational Graphs	As per recommendation and need of the hour	2023
Title 8: Conclusion		The Benefits of Cognitive Science, Working Memory: An Example of an Integrated Program of Study, Issues in Cognitive Science, Enhancing Cognitive Science.	As per recommendation and need of the hour	2023



CDC - Coordinator.



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