

List of documents (Evidences) related to One Credit Course

1. List of One credit courses offered by the industry
2. Syllabus of One credit courses offered through Industry Collaboration by Industry Institute Linkage Cell of NSRIT
3. List of students enrolled
4. Sample grade memo of one credit course
5. Sample Impact Analysis for two one - credit courses viz. "NX CAD Essentials" & "Mechatronics" offered by "Centre of Excellence for Maritime & Ship Building" for the students of Mechanical Engineering


Director

N.S. Raju Institute of Technology (A)
Sontyam, Vakkhapatnam-531173



**NADIMPALLI SATYANARAYANA RAJU
INSTITUTE OF TECHNOLOGY
(AUTONOMOUS)**



(Approved by AICTE, New Delhi - Affiliated to JNTU, Hyderabad - An ISO 9001:2015 & ISO 14001 Certified Institute)
Registered under 2(F) of the UGC Act 1956 & Accredited by NAAC with 'A' Grade (3, 10/4, 00)
SONTYAM, Pondurthi - Anandapuram Highway, Vakkhapatnam - 531173, Ph: 9885241127, 9095464545, www.nsr.it.edu

1.1.1. C One Credit Industry Driven Course for the Academic Year 2022-2023

S. No	Course Title	Offered to	Industry Associated	No of Students Attended	Mapping of POs/PSOs
1	Java Programming	CSE	HMI Engineering Services	206	PO # 01
2	Python Programming	CSE – AI & ML	HMI Engineering Services	67	PO # 01
3	C Programming	CE	HMI Engineering Services	87	PO # 01
4	Basics of Power Systems	EEE	CEMS	100	PO # 01, 02, 03, PSO# 01
5	Basics of Induction Motor	EEE	CEMS	100	PO # 01, 02, 03, PSO# 01
6	Industrial Automation (PLC & SCADA)	EEE & ECE	CEMS	98	PO # 01, 02, 03
7	Industrial IOT	EEE & ECE	CEMS	98	PO # 01, 03, 09
8	PCB Design	ECE	CEMS	120	PO # 01, 04
9	Embedded Systems	ECE	CEMS	120	PO # 01, 02, 03, 05
10	Ship Building Concept and Design using NXCAD	ME	CEMS	85	PO# 01, 03, 05, 10, PSO# 01
11	Mechatronics	ME	CEMS	85	PO# 01, 03, 05, 09, 12
12	Industrial Robotics	ME	CEMS	55	PO# 01, 04, 05, 09, 12, PSO# 02
13	Product Life Cycle Management	ME	CEMS	55	PO# 01, 11

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60th Floor, Pochurthi - Anaparthi Road Highway, Visakhapatnam - 521173, PH : 9800824107, 9899604262, www.nsr.it.edu.in

Department of Mechanical Engineering

Impact Analysis on Mechatronics Course (CEMS)

Based on the assessment and evaluation of students in Mechatronics course offered by Centre of Excellence for Maritime and Ship Building (CEMS) the following points were observed and are as follows:

1. The course encourages students to think critically and analytically, which improves their ability to solve problems
2. The course provides students with a deeper understanding of the subject matter, allowing them to apply their knowledge in real world situation
3. Due to the high cost of lab equipment, we have decided to pursue training as an alternative means of gaining the necessary knowledge and skills.
4. The course helps students in improving their academic performance by providing them with the knowledge and skills they need to succeed in their studies.
5. The course helps students develop self-confidence by providing them with opportunities to take on new challenges and succeed
6. The course provides students with opportunities to communicate their ideas and thoughts, which improves their communication skills


12/3/13
Course Facilitator


Head of the Department

Head of the Department
Mechanical Engineering
N. S. Raju Institute of Technology (N)
Visakhapatnam-521173



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**Department of Mechanical Engineering
Impact Analysis on the course "NX CAD Essentials"
(Identified Gap in the Curriculum)**

Based on the assessment and evaluation of students in NX CAD Essentials course offered by Centre of Excellence for Maritime and Ship Building (CEMS), the impact analysis is done and the following conclusions are drawn.

1. Students had an additional understanding beyond curriculum on the practical use the above mentioned tool to solve real world problems
2. Rich hands on experience on the above said tool in an industry environment that further enhances in the attainment of the following Program Outcomes viz are PO1 and PO10 that are strongly and moderately mapped
3. Students gained confidence after this course that they can deploy this tool without taking any support of peer group during their capstone project
4. Students gained proficiency in graphical communication
5. Gained confidence in understanding the advances and limitations of the above mentioned tool that helps them during their real time project work that caters the attainment of the Program Outcome pertaining to "Modern Tool Usage"


Course Facilitator


Head of the Department

Head of the Department
Mechanical Engineering
N. S. R. Institute of Technology (A)
Vakkhapatnam - 521173

COURSES OFFERED BY CEMS

SOFTWARE DESIGN CAD/CAM/CAE DOMAIN

CAD Essential for Designers	CAI Manufacturing Fundamentals	CAE Advanced Simulation	FEA FEM Using PC	LMS Simulation Management & Analysis	VR Virtual Reality
Structuring environments	Turning Manufacturing Plans	Complex Systems & Assembly	NCM Introduction	Model Planning & Analysis	
Systematic Model Building Fundamentals	Assembly Process	Advanced Finite Element Analysis	TCM Applications for RPL report	Advanced Measurement & Analysis	
Steel Mill	Computer Aided CAD	FEA Application & Case Study	Advanced 3D Modeling	Advanced 3D Modeling	
Building Environment	Fabrication Flow		Simulation Dynamics		
Manufacturing Design & Layout	Helping Productivity Improvement				
Advanced Assembly Design	Comprehensive Summary Cover				
Class A Part Manufacturing					
Tool Design					
Design Support					

Director
N.S. Raju Institute of Technology (A)
Sontyam, V. Akhapatnam-531173

INDUSTRY 4.0

PRECISE Tools

51 74341
SOFTWARE
TECH CENTRE 11
TECHNOMATX 240.2

ROCAD 33
CADWIN
EMULTRAM
PARAMARINE
SIAMM
TM-PORDAL
STARTER
POWERCODED
SMOOCODE PRO
SMAKRE Manager

HARDWARE

LMS SCADA
6400 II
BOND MILLING/TURNING
87 1280 PLC
87 1280 PLC
PC5 7
KUKA ROBOT
MECHANICS SYSTEM
KEMPPY WELDING
PROFIBUS/NET
SMAKRECS
SMAKRECS
SMAKRECS
SMAKRECS
OCULUS-INT

ENGINEERING / ELECTRICAL/ELECTRONICS CONTROLS/ DRIVES

PLC Profibus/Profinet	PLC S7-300	PLC S7-400	CNC 1-300 II	PLC S7-300	PLC S7-400	PLC S7-300	PLC S7-400	PLC S7-300	PLC S7-400
PLC Profibus/Profinet	PLC S7-300	PLC S7-400	CNC 1-300 II	PLC S7-300	PLC S7-400	PLC S7-300	PLC S7-400	PLC S7-300	PLC S7-400
PLC S7-300	PLC S7-400	PLC S7-300	PLC S7-400	PLC S7-300	PLC S7-400	PLC S7-300	PLC S7-400	PLC S7-300	PLC S7-400
SCADA									

www.cemsindia.org



CENTRE OF EXCELLENCE
IN MARITIME & SHIPBUILDING
COMPETENCIES, METHODOLOGY, EMPLOYABILITY & SKILLS
CREATING COMPETENCIES FOR INDUSTRY 4.0

1/41

SKILL DEVELOPMENT INITIATIVE OF GOVT OF INDIA



High end Engg, Software & Hardware Courses in Design & Manufacturing for Students & Industries, with the vision to facilitate transition to Industry 4.0

Centre of Excellence in Maritime & Shipbuilding (CEMS) is a dedicated Skill Development Centre in Maritime, Manufacturing, Automobile, Aerospace, Defence Production, Oil & Gas & Heavy Engineering Sectors.

Our Mission is

- To bridge the skill gap between Students & Industry by providing advanced Skill training, (facilitating better job opportunities & placements).
- To re-skill the employees to facilitate ready transition to Industry 4.0 & to make industry more automated & competitive.

- Strategically located in Vizag & Mumbai
- Section 8 Trust for Profit Organisation
- Courses in advanced CAD/CAM/CAE, Simulation, Test & Optimization Software, Digital Manufacturing & Hardware Technology
- Courses Certified by Siemens & IRLCLASS

COURSES ARE RELEVANT FOR THE FOLLOWING INDUSTRIES



DEFENCE SHIPPING AEROSPACE OIL & GAS HEAVY ENGG AUTOMOBILE

Mumbai 022 7189 2847 2915
Vizag 0891 278 4010
Email: info@cemsindia.org

www.cemsindia.org

Facebook: cemsindia
Twitter: cemsindia_in

OUR PROMOTERS



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Sontyam, V. Akhapatnam-531173

GOURSES OFFERED BY CEMS

SOFTWARE DESIGN CAD/CAM/CAE DOMAIN

CAD V21	CAM PRO/2.7	CAE Simulation	PLM Teamcenter	LMS Simulation	VR Virtual Reality
Product Design	Manufacturing Process	Advanced Simulation	PLM Usage	Virtual Measurement & Analysis	Virtual Reality
Product Development	Typical Manufacturing Process	Complete Structure & Assembly	PLM Integration	Local Testing & Analysis	
Systematic Modeling Functionality	Technical Process	Advanced Finite Element Analysis	PLM Integration for JTE (JIT)	Advanced Management & Analysis	
Sheet Metal	Technical PDM/CD	PLM Integration & Data Model Administration	Agreement with Simulation	Multi Body Systems	
Bracing Assembly	Technical File				
Interchange Design & Assembly	Inventory Management				
Advanced Assembly Design	Dispositional Assembly Control				
Drive & Gear Train Modeling					
Ball Design					
Engine Design					

7434/19
SOFTWARE

- MC 11
- TEAMCENTER 11
- TECHNOMATX 11.0.1
- ROCAD 11
- CADWIN
- SINUTRAIN
- PARALLARRE
- SALON
- TRIPORTAL
- STARTER
- POWERCONFIG
- SMOODE PRO
- SMART Manager

(quick check)
① Cyber Suite
② A-MS
③ S-X



HARDWARE

- LMS SCADA
- 8400 sl
- 8400 MILLING/TURNING
- S7 1200 PLC
- S7 1500 PLC
- PCS 7
- KUKA ROBOT
- MECHATRONICS SYSTEM
- KEWPI WELDING
- PROBUSNET
- SMARTS
- SMOODE
- SUTRAHS
- BLERCO 3D
- OCCULUS RIFT

ENGINEERING / ELECTRICAL / ELECTRONICS CONTROLS/ DRIVES

PLC Automation	Smart Manufacturing	PLC Automation	CNC	MEDIA TECHNOLOGY	ELECTRICAL	MECHANICAL & HYDRAULICS	PLASMA (GAS) WELDING	ELECTRO FITTING
PLC Automation	Smart Manufacturing	PLC Automation	CNC	MEDIA TECHNOLOGY	ELECTRICAL	MECHANICAL & HYDRAULICS	PLASMA (GAS) WELDING	ELECTRO FITTING
PLC Automation	Smart Manufacturing	PLC Automation	CNC	MEDIA TECHNOLOGY	ELECTRICAL	MECHANICAL & HYDRAULICS	PLASMA (GAS) WELDING	ELECTRO FITTING
PLC Automation	Smart Manufacturing	PLC Automation	CNC	MEDIA TECHNOLOGY	ELECTRICAL	MECHANICAL & HYDRAULICS	PLASMA (GAS) WELDING	ELECTRO FITTING

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SKILL DEVELOPMENT INITIATIVE OF GOVT OF INDIA



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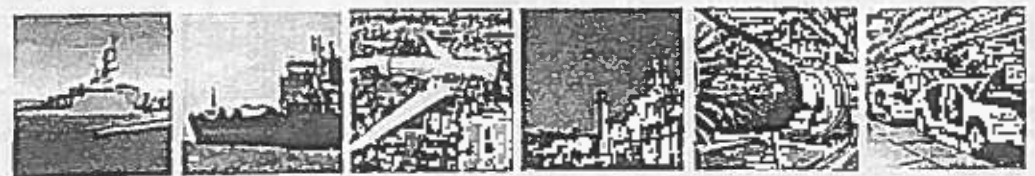
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- Courses Certified by Siemens & MCL ASS

COURSES ARE RELEVANT FOR THE FOLLOWING INDUSTRIES



DEFENCE SHIPPING AEROSPACE OIL & GAS HEAVY ENGG AUTOMOBILE

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Facebook: cemsindia
Twitter: cemsindia_jn

OUR PROMOTERS



PRODUCT DESIGN & VALIDATION LAB



Product design and validation lab provides services in Product Design & Validation, Design, Analysis, Simulation and Prototyping. The services include: 3D CAD, 2D CAD, 3D Printing, 3D Scanning, 3D Modeling, 3D Animation, 3D Rendering, 3D Simulation, 3D Inspection, 3D Measurement, 3D Assembly, 3D Disassembly, 3D Interference Check, 3D Motion Study, 3D Stress Analysis, 3D Thermal Analysis, 3D Fluid Dynamics Analysis, and 3D Acoustic Analysis.

ADVANCED MANUFACTURING LAB



Advanced Manufacturing Lab provides services in Advanced Manufacturing, CNC Machining, CNC Programming, CNC Setup, CNC Operation, CNC Maintenance, CNC Troubleshooting, CNC Safety, CNC Quality Control, CNC Inspection, CNC Measurement, CNC Calibration, CNC Training, CNC Consulting, CNC Support, CNC Integration, CNC Automation, CNC Optimization, CNC Innovation, and CNC Research.

Dimensional Accuracy Control System



Dimensional Accuracy Control System provides services in Dimensional Accuracy Control, 3D CAD, 3D Printing, 3D Scanning, 3D Modeling, 3D Animation, 3D Rendering, 3D Simulation, 3D Inspection, 3D Measurement, 3D Calibration, 3D Training, 3D Consulting, 3D Support, 3D Integration, 3D Automation, 3D Optimization, 3D Innovation, and 3D Research.

TEST & OPTIMIZATION LAB



Test & Optimization Lab provides services in Test & Optimization, 3D CAD, 3D Printing, 3D Scanning, 3D Modeling, 3D Animation, 3D Rendering, 3D Simulation, 3D Inspection, 3D Measurement, 3D Calibration, 3D Training, 3D Consulting, 3D Support, 3D Integration, 3D Automation, 3D Optimization, 3D Innovation, and 3D Research.

SIEMENS LMS TEST LAB

NESTING PRODUCTIVITY IMPROVEMENT



Nesting Productivity Improvement Lab provides services in Nesting Productivity Improvement, 3D CAD, 3D Printing, 3D Scanning, 3D Modeling, 3D Animation, 3D Rendering, 3D Simulation, 3D Inspection, 3D Measurement, 3D Calibration, 3D Training, 3D Consulting, 3D Support, 3D Integration, 3D Automation, 3D Optimization, 3D Innovation, and 3D Research.

DAEWOO

HULL DESIGN



Hull Design Lab provides services in Hull Design, 3D CAD, 3D Printing, 3D Scanning, 3D Modeling, 3D Animation, 3D Rendering, 3D Simulation, 3D Inspection, 3D Measurement, 3D Calibration, 3D Training, 3D Consulting, 3D Support, 3D Integration, 3D Automation, 3D Optimization, 3D Innovation, and 3D Research.

SIEMENS SIMULIA SIMULIA

AUTOMATION



Automation Lab provides services in Automation, 3D CAD, 3D Printing, 3D Scanning, 3D Modeling, 3D Animation, 3D Rendering, 3D Simulation, 3D Inspection, 3D Measurement, 3D Calibration, 3D Training, 3D Consulting, 3D Support, 3D Integration, 3D Automation, 3D Optimization, 3D Innovation, and 3D Research.

SIEMENS SIMULIA

PROCESS INSTRUMENTATION



Process Instrumentation Lab provides services in Process Instrumentation, 3D CAD, 3D Printing, 3D Scanning, 3D Modeling, 3D Animation, 3D Rendering, 3D Simulation, 3D Inspection, 3D Measurement, 3D Calibration, 3D Training, 3D Consulting, 3D Support, 3D Integration, 3D Automation, 3D Optimization, 3D Innovation, and 3D Research.

PCS 7

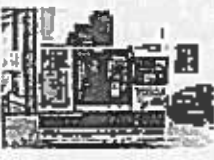
ELECTRICAL & ENERGY LAB



Electrical & Energy Lab provides services in Electrical & Energy, 3D CAD, 3D Printing, 3D Scanning, 3D Modeling, 3D Animation, 3D Rendering, 3D Simulation, 3D Inspection, 3D Measurement, 3D Calibration, 3D Training, 3D Consulting, 3D Support, 3D Integration, 3D Automation, 3D Optimization, 3D Innovation, and 3D Research.

SIEMENS SIMULIA

RESEARCH MACHINE SHOP



Research Machine Shop provides services in Research Machine Shop, 3D CAD, 3D Printing, 3D Scanning, 3D Modeling, 3D Animation, 3D Rendering, 3D Simulation, 3D Inspection, 3D Measurement, 3D Calibration, 3D Training, 3D Consulting, 3D Support, 3D Integration, 3D Automation, 3D Optimization, 3D Innovation, and 3D Research.

SIEMENS SIMULIA

MECHATRONICS



Mechatronics Lab provides services in Mechatronics, 3D CAD, 3D Printing, 3D Scanning, 3D Modeling, 3D Animation, 3D Rendering, 3D Simulation, 3D Inspection, 3D Measurement, 3D Calibration, 3D Training, 3D Consulting, 3D Support, 3D Integration, 3D Automation, 3D Optimization, 3D Innovation, and 3D Research.

SIEMENS SIMULIA

ROBOTICS



Robotics Lab provides services in Robotics, 3D CAD, 3D Printing, 3D Scanning, 3D Modeling, 3D Animation, 3D Rendering, 3D Simulation, 3D Inspection, 3D Measurement, 3D Calibration, 3D Training, 3D Consulting, 3D Support, 3D Integration, 3D Automation, 3D Optimization, 3D Innovation, and 3D Research.

SIEMENS SIMULIA

VIRTUAL REALITY



Virtual Reality Lab provides services in Virtual Reality, 3D CAD, 3D Printing, 3D Scanning, 3D Modeling, 3D Animation, 3D Rendering, 3D Simulation, 3D Inspection, 3D Measurement, 3D Calibration, 3D Training, 3D Consulting, 3D Support, 3D Integration, 3D Automation, 3D Optimization, 3D Innovation, and 3D Research.

OCULUS RIFT, CARTRIDGE

RADAR LAB



Radar Lab provides services in Radar, 3D CAD, 3D Printing, 3D Scanning, 3D Modeling, 3D Animation, 3D Rendering, 3D Simulation, 3D Inspection, 3D Measurement, 3D Calibration, 3D Training, 3D Consulting, 3D Support, 3D Integration, 3D Automation, 3D Optimization, 3D Innovation, and 3D Research.

RADAR SYSTEM

PNEUMATICS & HYDRAULICS



Pneumatics & Hydraulics Lab provides services in Pneumatics & Hydraulics, 3D CAD, 3D Printing, 3D Scanning, 3D Modeling, 3D Animation, 3D Rendering, 3D Simulation, 3D Inspection, 3D Measurement, 3D Calibration, 3D Training, 3D Consulting, 3D Support, 3D Integration, 3D Automation, 3D Optimization, 3D Innovation, and 3D Research.

PNEUMATICS & HYDRAULICS SYSTEM

WELDING PUMPS & PIPING



Welding Pumps & Piping Lab provides services in Welding Pumps & Piping, 3D CAD, 3D Printing, 3D Scanning, 3D Modeling, 3D Animation, 3D Rendering, 3D Simulation, 3D Inspection, 3D Measurement, 3D Calibration, 3D Training, 3D Consulting, 3D Support, 3D Integration, 3D Automation, 3D Optimization, 3D Innovation, and 3D Research.

KENAM WELDING

Customers with MX/Teamcenter as PDM backbone

4 Wheelers	2 Wheelers	Tractors	Equipment	Other	Services	IT

Full Stack Web Development Course Content

Introduction

- UI Developer roles and responsibilities
- UX designer roles
- Technologies needed
- Power of UI
- Current market requirements on UI
- Basic Technologies needed
- Difference between Front end and Backend
- Sample web pages
- Crawling and Meta tags

Basics - HTML

- Exploring existing pages
- Browsers & Editors
- DOM
- Structure of HTML Page
- Mandatory tags in html page (html, head, body)
- Heading tags (H1...H6), Tags and attributes (Class, Id, type...etc.)
- Inline and block level elements

CSS

- What is CSS
- Different ways of applying CSS for elements, and priority chain of CSS
- CSS Properties (color, font, size, border...etc.)
- Box model, Margin & Padding
- Positioning Elements, Floating Elements

More HTML Tags

- Including external page links in a page using anchor tags and its properties
- Working with row & column data using table tags
- Hiding and un-hiding elements using display property
- img tag, p tag, ul/ol tags, li, abbr, br, brw
- Layouts, forms, buttons
- Input fields (textbox, radio button, checkbox, dropdown, text area etc.)
- Debugging HTML & CSS (Firebug, IE and Chrome developer tool)
- Creating Tabs and menu lists

More CSS Properties

- Adding borders, font, Pseudo classes & Pseudo Elements
- positioning elements (absolute, relative, fixed & static)
- Image spiking
- Box model (margins, padding)
- Floating elements (float left, right etc.)
- Including external resources
- Absolute and Relative paths
- Including external resources like CSS, images etc.

FLAT NO: -101, SRINAGAR, RAJSEKHAR RESIDENCY, SRINAGAR, VISHAKHAPATNAM
CONTACT NO: -9347225321,7674925609 EMAIL ID: -rchmi.project2022@gmail.com

- Display Property(inline, block, inline block etc)
- Display none and hidden elements.

Form Elements

- Get & Post Communication
- Validating input values in a form.
- Form action and type

JavaScript

- Data types and data structures in Js
- Control structures, if, if-else, while, for, switch case statements
- Hoisting & type casting

JavaScript Supported Data Structures

- Arrays and Predefined methods.
- Working on logical programs using Arrays.
- Predefined methods in arrays
- Strings and predefined methods
- Objects
- JSON, SET, MAP
- Iterating through Dynamic JSON Object.
- Exploring Predefined Date object.

Advanced JavaScript

- Inheriting Static Object using proto.
- Inheritance using Object.create()
- JavaScript Classes
- Prototyping
- Inheritance using prototyping.
- Global and local variables
- Separating Dns using Classes
- Exception Handling
- Handling predefined and user defined exceptions
- Exploring try, catch, finally and throws.

jQuery

- History and version explore
- Difference between Minified and non-minified JS files.
- On load and on ready difference
- jQuery selectors
- Multiple ways of referring DOM elements using jQuery selectors
- jQuery methods
- Adding dynamic properties for DOM elements
- Toggling elements
- Creating dynamic elements using jQuery

jQuery Traversing methods

- Traversing Siblings, Children's & Parent Elements.
- Traversing Ancestors.
- Finding elements using jQuery techniques
- Filtering elements

Events using jQuery

- Binding events, Dynamic binding
- List of events been supported in jQuery (blur, change, click, dblclick....etc.)

AJAX

- Advantages with AJAX and its limitations
- Samples working with AJAX
- Different data formats used in AJAX (string, xml, JSON, etc.)
- XML and JSON difference
- Cross domain interactions using JSONP
- jQuery Promises with multiple conditions
- Handling Multiple AJAX Calls using jQuery Promises.

jQuery Animations

- Animation Effects using
- Hide, Show
- Sliding up and down, Fading, Animate Method.

jQuery Templating

- Loading DOM dynamically using jQuery templates
- loading templates using AJAX

HTML 5

- Difference between HTML5 and HTML 4
- List of Browsers support HTML5
- Doctype & Semantic Tags
- Multithreading Using Web Workers
- Media Support (audio and video tags)
- Graphics using Canvas tag and SVG Tags.
- Drag and Drop features
- Offline Application using Application Cache
- Exploring Navigator Object
- Working on locations lat and lng using Geolocation
- Storing user preferences using Local storage & Session Storage

CSS 3

- Difference between CSS 2 and CSS 3
- Adding borders and backgrounds
- Advanced text effects(drop-shadow)
- 2D and 3D Transformations
- Adding Transitions to elements
- Adding animations to text and elements

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Responsive Design

- Differences between multiple devices, making a page to work on multiple devices
- Media queries
- Introduction to Bootstrap CSS API

Bootstrap-4 along with components

- Basic Typography
- Text-Alignments, Float-Positions
- Colors-Backgrounds, Margins-Paddings
- Skinning, Breakpoints, Buttons, Navbars
- List-Groups, Forms, Input-Groups
- Alerts-Progress
- Tables, Cards, Carousel, Collapse, Modal
- Grid-System, Grid-Alignments, FlexBoxes

ECMA 6 (Latest JavaScript)

- Const and let keywords
- Arrow functions, advantages
- Extended parameter handling, default parameters
- Template literals
- Enhanced object parameters
- Creating class classes, inheritance
- Implementing promises
- new data structures sets and maps
- New string built-in methods
- Using iterators

NODE JS

- Introduction to Server-Side Scripting
- Node JS Features and Drawbacks
- Setup Environment for Node.js
- Node JS Program architecture
- Node JS Web Server
- Node JS Global Objects
- Node JS OS Objects
- Node JS Error Handling
- Node JS Event Loop
- Node JS File System
- Async and Sync
- Connecting with Database
- Handling CRUD Operations
- Express
- Routing in Express
- Response Methods in Express
- Serving Static Files
- Express JSON Parser
- Express CORS
- Creating Web API

Express JS

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- Exploring Express module
- Scaling up express environment
- Creating http server using express

Express Sessions

Data Communication

- Sending and receiving Post & GET Data
- Reading data from GET/POST requests

Templates

- Creating templates using PUG/JADE
- Generating Dynamic html pages from server
- Responding a template for a client request

File System

- Exploring File system, Reading and writing to files

REST API & WebServices

- Introduction to REST API
- REST Architecture

Clustering

- Creating and handling multiple clusters in Node.js

DB Connection

- Connecting to Mongo DB & Connecting to SQL

WebService with DB interactions

- Creating web services which communicate with Database

MONGO DB

- Introduction to MongoDB
- Configuring Server and Client
- MongoDB Compass
- Creating Database
- MongoDB Commands
- MongoDB CRUD Operations

Angular-13 Introduction

ReactJS Introduction

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C Training Course Overview Duration :- 150hrs

Fundamentals In C

- Program
- Programming
- Programming Languages
- Types of software
- Introduction to C
- History of C
- Features of C
- Applications of C
- Character set, ASCII Table
- Tokens
- Keywords
- Identifiers & Naming Rules
- constants
- Data Types
- Type Qualifiers
- How does the data stored in Computers Memory
- Variables
- Variable Declaration
- Variable Assignment
- Variable Initialization
- Comments
- Defining Constants
- MCQs

Operators and Expressions

- Arithmetic operators
- Arithmetic expressions
- Evaluation of expressions
- Relational operators
- Logical operators
- Assignment operators
- Increment & decrement operators
- Conditional operator
- Bitwise operators
- Type casting
- sizeof operator
- Comma operator
- Operators Precedence and Associativity
- Expressions
- Evaluation of Expressions
- MCQs

Input-Output Functions

- Input-Output Library Functions
- Non-formatted Input and Output
- Character oriented Library functions
- Compiler, Linker and Loader
- Program execution phases
- Formatted Library Functions
- Mathematical Library Functions
- Structure of a C Program
- IDE
- Basic programs
- MCQs

Control Statements

- Conditional Control Statements
- if
- if-else
- nested if-else
- if-else-if ladder
- Multiple Branching Control Structure
- switch-case
- Loop Control statements
- while
- do-while
- for
- Nested Loops
- Jump Control structures
- break
- continue
- goto
- return
- Programs
- MCQs

Arrays

- Arrays
- One dimensional arrays
- Declaration of 1D arrays
- Initialization of 1D arrays
- Accessing element of 1D arrays
- Reading and displaying elements
- Programs on 1D Arrays
- Two dimensional arrays
- Declaration of 2D arrays

- Initialization of 2D arrays
- Accessing element of 2D arrays
- Reading and displaying elements
- Programs on 2D Arrays
- Three dimensional arrays
- MCQs

Strings

- String Concept
- Introduction to String in C
- Storing Strings
- The string Delimiter
- String Literals (String Constants)
- Strings and Characters
- Declaring Strings
- Initializing Strings
- Strings and the Assignment Operator
- String Input Functions / Reading Strings
- String Output Functions / Writing Strings
- String Input-Output using (scanf()) and (printf()) Functions
- Single Character Library Functions / Character Manipulation in the String
- String Manipulation Library Functions
- Programs Using Character Arrays
- Array of Strings (2D Character Arrays)
- Programs Using Array of Strings
- MCQs

Pointers

- Understanding Memory Addresses
- Pointer Operators
- Pointer
- Pointer Advantages and Disadvantages
- Declaration of Pointer Variables
- Initialization of Pointer Variables
- Dereferencing / Redirecting Pointer Variables
- Declaration versus Redirection
- Void Pointer
- Null Pointer
- Compatibility
- Array of Pointers
- Pointer to Pointer
- Pointer Arithmetic
- Dynamic Memory Allocation Functions

Functions

- Functions
- Advantages of using functions
- Defining a function
- Calling a function
- Return statement
- Function Prototype
- Basic Function Designs
- Programs Using Functions
- Scope
- Recursion
- Iteration vs Recursion
- Nested functions
- Variable Length Number of Arguments
- Parameter Passing Techniques – Call by value & Call by Address
- Functions Returning Pointers
- Pointers and One-Dimensional Arrays
- Pointers and Two-Dimensional Arrays
- Passing 1D arrays to Functions
- Passing 2D arrays to Functions
- Pointers and Strings
- Passing Strings to Functions
- Pointer to Function
- MCQs

Storage Classes

- Object Attributes
- Scope
- Extent
- Linkage
- auto
- static
- extern
- register
- MCQs

Preprocessor Directives

- The #include Preprocessor Directive & User defined header files
- The #define Preprocessor Directive: Symbolic Constants
- The #define Preprocessor Directive: Macros
- Conditional Compilation Directives
- #if
- #else
- #elif
- #endif
- #ifdef

- #ifndef
- #undef
- #error
- #line
- #pragma
- MCQs

Structures, Unions, Enumerations and Typedef

- Structures
- Structure Type Declaration
- Structure Variable Declaration
- Initialization of Structure
- Accessing the members of a structure
- Programs Using Structures
- Operations on Structures (Copying and Comparing Structures)
- Nested structures (Complex Structures)
- Structures Containing Arrays (Complex Structures)
- Array of Structures (Complex Structures)
- Pointer to Structure
- Accessing structure member through pointer using dynamic memory allocation
- Pointers within Structures
- Self-referential structures
- Passing Structures to Functions
- Functions returning Structures
- Unions
- Differences between Structures & Unions
- Enumerated Types / enum keyword
- The Type Definition / typedef keyword
- Bit fields
- MCQs

Command Line Arguments

Files

- Concept of a file
- Streams
- Text File and Binary Files
- State of a File
- Opening and Closing Files
- File Input / Output Functions
- Formatted Input-Output Functions
- Character Input-Output Functions
- Line Input-Output Functions
- Block Input-Output Functions
- File Status Functions (Error Handling)

- Positioning Functions
- System File Operations
- MCQs

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Python Syllabus

Core Python

Introduction

- ✓ History
- ✓ Features
- ✓ Setting up path
- ✓ Working with Python
- ✓ Basic Syntax
- ✓ Variable and Data Types
- ✓ Operator

Conditional Statements

- ✓ If
- ✓ If-else
- ✓ Nested if-else

Looping

- ✓ For
- ✓ While
- ✓ Nested loops

Control Statements

- ✓ Break
- ✓ Continue
- ✓ Pass

String Manipulation

- ✓ Accessing Strings
- ✓ Basic Operations
- ✓ String slices
- ✓ Function and Methods

Lists

- ✓ Introduction

- ✓ Accessing list
- ✓ Operations
- ✓ Working with lists
- ✓ Function and Methods

Tuple

- ✓ Introduction
- ✓ Accessing tuples
- ✓ Operations
- ✓ Working
- ✓ Functions and Methods

Dictionaries

- ✓ Introduction
- ✓ Accessing values in dictionaries
- ✓ Working with dictionaries
- ✓ Properties
- ✓ Functions

Functions

- ✓ Defining a function
- ✓ Calling a function
- ✓ Types of functions
- ✓ Function Arguments
- ✓ Anonymous functions
- ✓ Global and local variables

Modules

- ✓ Importing module
- ✓ Math module
- ✓ Random module
- ✓ Packages
- ✓ Composition

Input-Output

- ✓ Printing on screen
- ✓ Reading data from keyboard
- ✓ Opening and closing file
- ✓ Reading and writing files
- ✓ Functions

Exception Handling

- ✓ Exception
- ✓ Exception Handling
- ✓ Except clause
- ✓ Try ? finally clause
- ✓ User Defined Exceptions

Advance Python

OOPs concept

- ✓ Class and object
- ✓ Attributes
- ✓ Inheritance
- ✓ Overloading
- ✓ Overriding
- ✓ Data Hiding

Regular expressions

- ✓ Match function
- ✓ Search function
- ✓ Matching VS Searching
- ✓ Modifiers
- ✓ Patterns

CGI

- ✓ Introduction
- ✓ Architecture
- ✓ CGI environment variable
- ✓ GET and POST methods
- ✓ Cookies
- ✓ File upload

Database

- ✓ Introduction
- ✓ Connections
- ✓ Executing queries
- ✓ Transactions
- ✓ Handling error

Networking

- ✓ Socket
- ✓ Socket Module
- ✓ Methods
- ✓ Client and server
- ✓ Internet modules

Multithreading

- ✓ Thread
- ✓ Starting a thread
- ✓ Threading module
- ✓ Synchronizing threads
- ✓ Multithreaded Priority Queue

GUI Programming

- ✓ Introduction
- ✓ Tkinter programming
- ✓ Tkinter widgets

Web Programming

Django

Data Science Applications development

Numpy

Scipy

Machine learning frameworks

Tensor Flow

C Language

Contents

- 1 About C-Language Training**
- 2 C Training Course Objective**
- 3 Why This Course is Required**
- 4 C Training Course Overview**
 - 4.1 Fundamentals in C**
 - 4.2 Operators and Expressions**
 - 4.3 Input-Output Functions**
 - 4.4 Control Statements**
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 - 4.14 Graphics**

About C-Language Training

C is an basic building block for every languages. It is a general-Purpose Language. To develop the programming skills '**C**' is the only platform for to develop programming techniques for any type languages. It is an Mid-level programming language for systems programming very widely used, relatively low-level, weakly typed, systems programming language associated with Unix and through that with Linux and the open source movement Performance becomes somewhat portable. Many Applications Like System Software, Application Software, Embedded Systems, Cool Games, Mobile applications, Device Drivers Programming etc of the World applications written in **C** and the List continues...**C** Designed and implemented by Dennis Ritchie 1972.

C Training Course Objective

This Course main objective for the student to develop primary programming skills up to the higher end in order solve the different programming logics. The student can able write different type of logics at the end of the sessions. After learning the **C** course the student can able get all the fundamental knowledge in all the languages. After Completion the student can able to attend any MNC Company interview and can solve the technical rounds both theoretically and practically. We Provide lot of logical examples to make as good as.

Why This Course is Required

One thing we can speak without **C** Knowledge there is no Programming Logics to learn any language. There is no interviews for a Fresher without **C** language. To learn Java, .Net, Databases the list continues so many we require "**C**"

Knowledge for a student Finally to tell many languages are internally
Programmed by only C Language.

C Training Course Overview

Fundamentals in C

Program

Programming

Programming Languages

Types of software

Introduction to C

History of C

Features of C

Applications of C

Character set, ASCII Table

Tokens

Keywords

Identifiers & Naming Rules

constants

Data Types

Type Qualifiers

How does the data stored in Computers Memory

Variables

Variable Declaration

Variable Assignment

Variable Initialization

Comments

Defining Constants

MCQs

Operators and Expressions

Arithmetic operators

Arithmetic expressions

Evaluation of expressions

Relatiunual operators

Logical operators

Assignment operators

Increment & decrement operators

Conditional operator

Bitwise operators

Type casting

Size of operator

Comma operator

Operators Precedence and Associativity

Expressions

Evaluation of Expressions

MCQs

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Input-Output Library Functions

Non-formatted Input and Output

Character oriented Library functions

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Program execution phases

Formatted Library Functions

Mathematical Library Functions

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MCQs

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Programs on 1D Arrays

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Programs Using Array of Strings

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Null Pointer

Compatibility

Array of Pointers

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Dynamic Memory Allocation Functions

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Functions

Advantages of using functions

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Return statement

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Recursion

Iteration vs Recursion

Nested functions

Variable Length Number of Arguments

Parameter Passing Techniques – Call by value & Call by Address

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Object Attributes

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Linkage

auto

static

extern

register

MCQs

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The #define Preprocessor Directive: Macros

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#endif

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#undef

#error

#line

#pragma

MCQs

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Line Input-Output Functions

Block Input-Output Functions

File Status Functions (Error Handling)

Positioning Functions

System File Operations

MCQs

Graphics

Initialization of graphics

Drawing shapes using pre-defined functions

Finding the resolution of screen

Setting colors to text and window

Font settings

Fill styles

Basic GUI applications

Data Structure

Contents

- 1 About Data Structure Training**
- 2 Data Structure Training Course Objective**
- 3 Data Structure Training Course Duration**
- 4 Data Structure Training Course Content Overview**
 - 4.1 Introduction to Data Structure**
 - 4.2 Algorithms**
 - 4.3 Performance Analysis**
 - 4.4 Asymptotic Notations-**
 - 4.5 Arrays**
 - 4.6 Structures**
 - 4.7 Pointers**
 - 4.8 Dynamic Memory allocation**
 - 4.9 Stacks**
 - 4.10 Stack Implementation using pointer (dynamic)**
 - 4.11 Expression**
 - 4.12 Queues**
 - 4.13 Circular queues**

- 4.14 Double Ended queue (Deque)**
- 4.15 Single linked list**
- 4.16 Stack implementation using linked list**
- 4.17 Queue Implementation using linked list**
- 4.18 Doubly linked list**
- 4.19 Circular linked list**
- 4.20 Circular Doubly Linked List**
- 4.21 Binary Tree**
- 4.22 Binary Search Tree**
- 4.23 Graph**
- 4.24 Searching Algorithms**
- 4.25 Sorting Algorithms**

About Data Structure Training

Data Structures is a concept a means of storing a collection of data. **Computer Science** is a concern with study of methods for effectively using a computer to solve problems. These can be solve by algorithms and data structures. **Data Structures** tells you what way the data as to store in computer memory and how to access the data efficiently. Many Applications are designed by data structures stack applications like page visited history in a web-browser, chain of method calls in the Java virtual machine or C++ Run-time environment etc **Queue Application Like Waiting Lines, Multi-programming etc** For many applications the choice of proper data structure is the only major decision involving the implementation. Majorly the database designing and internal implementation is done only by using **Data Structures** techniques.

Data Structure Training Course Objective

This Course main objective for the student to understand **Analysis and Designing of the Algorithms** and how the different data structures are used for efficient accessing of the data and **Manipulation of the data** at the end of the session we can able to **Know different Kinds of data structures** and we can able to **provide different algorithms for time and space complexity.**

Data Structure Training Course Content

Overview

Introduction to Data Structure

Algorithms

Performance Analysis

- Time complexity
- Space complexity

Asymptotic Notations-

- Big O
- Omega
- Theta notations

Arrays

Structures

Pointers

Dynamic Memory allocation

- Malloc()
- calloc()
- realloc()
- free()

Stacks

- Stack Operations
 - push()
 - pop()
 - peek()
 - display()
 - isEmpty()
 - isFull()
- Stack implementation using arrays
- Applications

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- Decimal to Binary
- String reverse
- Number reverse
- Recursion – Towers of Hanoi
- Balanced Parentheses
- Expressions

Stack Implementation using pointer (dynamic)

Expression

- Introduction to Notations
- Importance of Notations in expression evaluation
- Conversion Algorithms
 - Infix to prefix
 - Infix to postfix
 - Prefix to infix
 - Prefix to postfix
 - Postfix to infix
 - Postfix to prefix
- Implementation of all the conversions

Queues

- Operations on Queue – enqueue(), dequeue()
- Queue implementation using static arrays
- Applications
- Queues Implementations using pointer (dynamic)

Circular queues

Double Ended queue (Deque)

Single linked list

- Introduction
- Construction
- Length
- Insertion
- Deletion
- Sort
- Reverse list

- Swap node data
- Swap nodes
- Applications

Stack implementation using linked list

Queue implementation using linked list

Doubly linked list

Circular linked list

Circular Doubly Linked List

Binary Tree

- Terminology
- Differences between Tree and Binary Tree
- Binary Tree Representations
- Expression Trees
- Traversals
 - In-order
 - pre-order
 - post-order

Binary Search Tree

- Introduction to BST
- Insertion
- Deletion
- Search
- Implementation

Graph

- Introduction & Terminology
- Graph Representations
- Traversal
 - BFS (Breadth First Search)
 - DFS (Depth First Search)

Searching Algorithms

- Linear search

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- Binary search

Sorting Algorithms

- Bubble sort
- Selection sort
- Insertion sort
- Heap sort
- Merge sort
- Quick sort

AVL Trees

- Introduction
- BST v/s AVL
- Rotations
 - L-L-Rotation
 - R-R-Rotation
 - L-R-Rotation
 - R-L-Rotation
- Insertion
- Deletion
- Traversal

Red Black Trees

- Introduction
- BST v/s AVL v/s RBT
- Rotations
 - L-L-Rotation
 - R-R-Rotation
 - L-R-Rotation
 - R-L-Rotation
- Insertion
- Deletion

B trees

- M-way Search Tree
- Search

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- Insertion
- Deletion

Hashing

- Hash Table representation
- Hash function-Division Method
- Collision
- Collision Resolution Techniques
 - Separate Chaining
 - open addressing
 - linear probing
 - quadratic probing
 - double hashing
 - Rehashing

Priority Queue-Definition

- Operations-Insertion, Deletion,

Heap

- Definition
- Max Heap
- Min Heap
- Insertion and deletion

Pattern matching algorithms

- Brute force
- Boyer -Moore algorithm
- Knuth-Morris-Pratt algorithm

Tries

- Standard Tries
- Compressed Tries
- Suffix tries

Dynamic Programming

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Greedy Method

Divide and conquer method

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