Government of Pakistan

National Vocational and Technical Training Commission

Prime Minister's Youth Skills Development Program

"Skills for All"

Course Contents / Lesson Plan
Course Title: Microsoft .NET Core with ReactJS
Duration: 3 Months

Revised Edition

Trainer Name	
Authur Name	**Zunnoorain Ashraf** **Sr. Software Engineer**
Course Title	**Microsoft .NET Core with ReactJS**
Objectives and Expectations	**Employable skills and hands-on practice in Microsoft .NET Core with ReactJS** This is a special course designed to address unemployment in the youth. The course aims to achieve the above objective through hands on practical training delivery by a team of dedicated professionals having rich market/work experience. This course is therefore not just for developing a theoretical understanding/back ground of the trainees. Contrary to that, it is primarily aimed at equipping the trainees to perform commercially in a market space in independent capacity or as a member of a team. The course therefore is designed to impart not only technical skills but also soft skills (i.e. interpersonal/communication skills; personal grooming of the trainees etc.) as well as entrepreneurial skills (i.e. marketing skills; free lancing etc.). The course also seeks to inculcate work ethics to foster better citizenship in general and improve the image of Pakistani work force in particular. **Main Expectations:** In short, the course under reference should be delivered by professional instructors in such a robust hands-on manner that the trainees are comfortably able to employ their skills for earning money (through wage/self-employment) at its conclusion. This course thus clearly goes beyond the domain of the traditional training practices in vogue and underscores an expectation that a market-centric approach will be adopted as the main driving force while delivering it. The instructors should therefore be experienced enough to be able to identify the training needs for the possible market roles available out there. Moreover, they should also know the strengths and weaknesses of each trainee to prepare them for such market roles during/after the training. i. Specially designed practical tasks to be performed by the trainees have been included in the Annexure-I to this document. The record of all tasks performed individually or in groups must be preserved by the management of the training Institute clearly labeling name, trade, session, etc. so that these are ready to be physically inspected/verified through monitoring visits from time to time. The weekly distribution of tasks has also been indicated in the weekly lesson plan given in this document. ii. To materialize the main expectations, a special module on **Job Search & Entrepreneurial Skills** has been included in the latter part of this course (5th & 6th month) through which, the trainees will be made aware of the Job search techniques in the local as well as international job markets (Gulf countries). Awareness around the visa process and immigration laws of the most favored labor destination countries also

	form a part of this module. Moreover, the trainees would also be encouraged to venture into self-employment and exposed to the main requirements in this regard. It is also expected that a sense of civic duties/roles and responsibilities will also be inculcated in the trainees to make them responsible citizens of the country.

iii. A module on **Work Place Ethics** has also been included to highlight the importance of good and positive behavior in the workplace in the line with the best practices elsewhere in the world. An outline of such qualities has been given in the Appendix to this document. Its importance should be conveyed in a format that is attractive and interesting for the trainees such as through PPT slides +short video documentaries. Needless to say that if the training provider puts his heart and soul into these otherwise non-technical components, the image of the Pakistani workforce would undergo a positive transformation in the local as well as international job markets.

To maintain interest and motivation of the trainees throughout the course, modern techniques such as:

- Motivational Lectures
- Success Stories
- Case Studies

These techniques would be employed as an additional training tool wherever possible (these are explained in the subsequent section on Training Methodology).

Lastly, evaluation of the competencies acquired by the trainees will be done objectively at various stages of the training and a proper record of the same will be maintained. Suffice to say that for such evaluations, practical tasks would be designed by the training providers to gauge the problem-solving abilities of the trainees.

(i) Motivational Lectures

The proposed methodology for the training under reference employs motivation as a tool. Hence besides the purely technical content, a trainer is required to include elements of motivation in his/her lecture. To inspire the trainees to utilize the training opportunity to the full and strive towards professional excellence. Motivational lectures may also include general topics such as the importance of moral values and civic role & responsibilities as a Pakistani. A motivational lecture should be delivered with enough zeal to produce a deep impact on the trainees. It may comprise of the following:

- Clear Purpose to convey the message to trainees effectively.
- Personal Story to quote as an example to follow.
- Trainees Fit so that the situation is actionable by trainees and not represent a just idealism.
- Ending Points to persuade the trainees on changing themselves.

A good motivational lecture should help drive creativity, curiosity, and spark the desire needed for trainees to want to learn more.

The impact of a successful motivational strategy is amongst others commonly visible in increased class participation ratios. It increases the trainees' willingness to be engaged on the practical tasks for a longer time without boredom and loss of interest because they can see in their mind's eye where their hard work would take them in short (1-3 years); medium (3 -10 years) and long term (more than 10 years).

As this tool is expected that the training providers would make arrangements for regular well planned motivational lectures as part of a coordinated strategy interspersed throughout the training period as suggested in the weekly lesson plans in this document.

Course-related motivational lectures online link is available in **Annexure-II**.

(ii) Success Stories

Another effective way of motivating the trainees is using Success Stories. Its inclusion in the weekly lesson plan at regular intervals has been recommended till the end of the training.

A success story may be disseminated orally, through a presentation, or using a video/documentary of someone that has risen to fortune, acclaim, or brilliant achievement. A success story shows how a person achieved his goal through hard work, dedication, and devotion. An inspiring success story contains compelling and significant facts articulated clearly and easily comprehendible words. Moreover, it is helpful if it is assumed that the reader/listener knows nothing of what is being revealed. The optimum impact is created when the story is revealed in the form of:-

- Directly in person (At least 2-3 cases must be arranged by the training institute)
- Through an audio/ videotaped message (2-3 high-quality videos must be arranged by the training institute)

It is expected that the training provider would collect relevant high-quality success stories for inclusion in the training as suggested in the weekly lesson plan given in this document.

The suggestive structure and sequence of a sample success story and its various shapes can be seen in **Annexure III**.

(iii) Case Studies

Where a situation allows, case studies can also be presented to the trainees to widen their understanding of the real-life specific problem/situation and to explore the solutions.

In simple terms, the case study method of teaching uses a real-life case example/a typical case to demonstrate a phenomenon in action and explain theoretical as well as practical aspects of the knowledge related to the same. It is an effective way to help the trainees comprehend in depth both the theoretical and practical aspects of the complex phenomenon in depth with ease. Case teaching can also stimulate the trainees to participate in discussions and thereby boost their confidence. It also makes the classroom atmosphere interesting thus maintaining the trainee interest in training till the end of the course.

Depending on suitability to the trade, the weekly lesson plan in this document may suggest case studies be presented to the trainees. The trainer may adopt a PowerPoint presentation or video format for such case studies whichever is deemed suitable but only those cases must be selected that are relevant and of a learning value.

The Trainees should be required and supervised to carefully analyze the cases.

For this purpose, they must be encouraged to inquire and collect specific information/data, actively participate in the discussions, and intended solutions to the problem/situation.

Case studies can be implemented in the following ways: -

	i. A good quality trade-specific documentary (At least 2-3 documentaries must be arranged by the training institute) ii. Health &Safety case studies (2 cases regarding safety and industrial accidents must be arranged by the training institute) iii. Field visits(At least one visit to a trade-specific major industry/ site must be arranged by the training institute)
Entry-level of trainees	For an advanced course of **Microsoft .NET Core with ReactJS** proposed entry level is minimum bachelors in relevant subject, so expectations from the trainees are: • Have knowledge of Programming Languages C# and VB.NET • Have Understanding of .NET Framework • Have concept of HTML, CSS, and JavaScript • Having a Basic Understanding of Web Development Concepts • Having SQL Server Database Knowledge • Familiarity with MVC Architecture • Having knowledge of Web APIs • Familiar with ReactJS
Learning Outcomes of the course	By the end of this course, students will be able to: • Design/Development of Web Applications, eCommerce Website and CMS • Understanding of modern tool usage for Web Development in Industry • Comprehensive knowledge of React JS, including its component-based architecture. • Ability to create and manage React components. • Proficiency in developing Single Page Applications using React for the frontend. • Integration of React with .NET Core APIs. • Consuming and handling data from APIs within a React application.
Course Execution Plan	The total duration of the course: **3 months (12 Weeks)** Class hours: **4 hours per day** Theory: **20%** Practical: **80%** Weekly hours: **20 hours per week** Total contact hours: **260 hours**
Companies offering jobs in the respective trade	• Senior Dotnet and Reactjs Developer - Calrom Islamabad: Software House develop innovative travel software solutions, designed from the ground up in partnership with some of the world's leading airlines. • Dotnet Developer - SigmaTec Solutions Pvt. Limited Islamabad: Software House in Islamabad provide unique ability to combine vital product development expertise with deep technical competence and business comprehension. • React Developer - Rainsoft Financials Karachi: Rainsoft Financials (Pvt.) Ltd. is an IT and IT enabled off-shore BPO service provider for the US financial services industry.

	• Junior .NET Developer - Ciklum · Islamabad: Dot Net Web API Expert
Job Opportunities	• Web Applications Developer • Back – End Web Developer using ASP.NET Core • Full Stack Web Developer using ASP.NET Core • Front - End Developer
No of Students	25
Learning Place	Classroom / Lab
Instructional Resources	1. HTML/CSS/JavaScript: https://dotnettutorials.net/course/html-tutorials/ https://dotnettutorials.net/course/css-tutorials-for-beginners-and-professionals/ https://dotnettutorials.net/course/javascript-tutorial-for-beginners-and-professionals/ These links will provide step by step knowledge of HTML, CSS, and JavaScript for both beginners and experts to develop basic static Web Page. 2. SQL Server: https://dotnettutorials.net/course/sql-server/ This link provides a basic and expert tutorial about SQL Server for creating and managing database and perform different functions e.g. Clauses, Joins, Views and Store Procedures on data stored in database. 3. ASP.NET Core MVC: https://dotnettutorials.net/course/asp-dot-net-mvc-tutorials/ In this ASP.NET MVC Tutorial For Beginners and Professionals series, it covered all the features of ASP.NET MVC. You will learn from the basic to advanced level features of ASP.NET MVC like JavaScript, jQuery, Entity framework, and much more.

	4. ASP.NET Web API:
	https://dotnettutorials.net/course/asp-net-web-api/
	This tutorial will cover all the features of ASP.NET Web API provided by Microsoft i.e., it is used to develop HTTP-Based Web Services on top of .NET Framework.
	5. React JS Tutorials
	https://dotnettutorials.net/course/reactjs-tutorials/
	This React Tutorial will take you through most of the practical applications of React. It will cover all the concepts of React JS with Real-Time Applications from the very basic to advanced features of React JS.
	6. ASP.NET Web API + React JS – Full Stack CRUD App: https://www.youtube.com/watch?v=EJgzPBO2juM
	This video provides step by step tutorial for Full Stack CRUD App tutorial using ASP.NET Core + SQL and React JS

MODULES

Scheduled Weeks	Module Title	Days	Hours	Learning Units	Home Assignment
Week 1	**Introduction to Web Development and ASP.NET**	**Day 1**	**Hour 1**	Course Introduction and Expectations	
			Hour 2	Intro to ASP.NET and React JS	
			Hour 3	Job Market Overview	
			Hour 4	Work Ethics in Institute	
		Day 2	**Hour 1**	**Introduction to HTML** • Learn Basic Tags in HTML • Tables in HTML • Forms in HTML	
			Hour 2	**Introduction to CSS** • Learn Basics of CSS • Call Multiple CSS Files in Single HTML Page	• **Task 1** *Details may be seen at Annexure-I*
			Hour 3	**JavaScript Language Basics** • Variables and Data Types • JavaScript Basic Operators • JavaScript Logical Operators	
			Hour 4	**Lab:** Create a Simple HTML Page with CSS and Basic JavaScript files	
		Day 3	**Hour 1**	**JavaScript Conditional Statements**	

			Hour 2	**JavaScript Loops**	
			Hour 3	**JavaScript Functions**	
			Hour 4	**Lab:** Amend the HTML page with Complex JavaScript File	
		Day 4	Hour 1	**Setup and Install Visual Studio .NET**	
			Hour 2	**Getting Started with C#** • Variables • Data Types • Control Statements	
			Hour 3	**Getting Started with C#** • Loops • Functions • Abstract Classes • Data Structures and Collections	
			Hour 4	**Revise Object Oriented Programming Concepts**	
		Day 5	Hour 1	**Revise Object Oriented Programming Concepts**	
			Hour 2	**Revise .NET Framework and LINQ**	
			Hour 3	**Lab:** Create a Basic C# Web Application	
			Hour 4	Short Question/Answer Session	
Week 2	**Working with SQL Server**	Day 1	Hour 1	**SQL Server Basics** • Creating, Altering and Deleting Database and Tables	• **Task 2**

				Hour 2	**SQL Server Basics** • Datatypes • Constraints	*Details may be seen at Annexure-I*
				Hour 3	**SQL Server Basics** • Datatypes • Constraints	
				Hour 4	**Lab:** Let the students **Practice SQL Server** with their **Questions**	
			Day 2	Hour 1	**SQL Server Basics** • Primary, Foreign and Composite Key	
				Hour 2	**SQL Server Basics** • Primary, Foreign and Composite Key • Select Statement	
				Hour 3	**SQL Server – Clauses** • Where Clause • Order Clause • Top n Clause • Group By Clause	
				Hour 4	**SQL Server – Clauses** • Having Clause • Difference Between Where and Having Clause	
			Day 3	Hour 1	**SQL Server Operators** • Assignment Operator • Arithmetic Operator • Comparison Operator • Logical Operator	
				Hour 2	**SQL Server Operators** • IN BETWEEN and LIKE Operator • ALL Operator • ANY Operator	

				• SOME Operator	
			Hour 3	**SQL Server Operators** • EXISTS Operator • UNION and UNION ALL Operators	
			Hour 4	**SQL Server Operators** • EXCEPT Operator • INTERSECT Operator • Differences Between UNION EXCEPT and INTERSECT Operators	
		Day 4	**Hour 1**	**SQL Server – JOINS** • Joins in SQL Server • Inner Join	
			Hour 2	**SQL Server – JOINS** • Left Outer Join • Right Outer Join	
			Hour 3	**SQL Server – JOINS** • Full Outer Join • Self Join • Cross Join	
			Hour 4	**Question / Answer Session** **Lab Session**	
		Day 5	**Hour 1**	**SQL Server – Indexes** • Indexes in SQL Server • Clustered Index	
			Hour 2	**SQL Server – Indexes** • Non-Clustered Index • How Index impacts DML Operation	

			Hour 3	**SQL Server – Indexes** • Unique Index • Index in GROUP BY Clause	
			Hour 4	**Advantages and Disadvantages of Indexes** **Lab:** Let the students practice and ask questions	
Week 3	**Working with SQL Server Database**	**Day 1**	Hour 1	**SQL Server – Built-in Functions**	
			Hour 2	**SQL Server – Built-in Functions**	
			Hour 3	**Stored Procedures**	
			Hour 4	**Stored Procedures**	
		Day 2	Hour 1	**Exception Handling and Transaction Management** • Transaction Management • Types of Transactions • Nested Transactions	• **Task 3** _Details may be seen at Annexure-I_
			Hour 2	**Exception Handling and Transaction Management** • ACID Properties • Exception Handling	
			Hour 3	**Exception Handling and Transaction Management** • RaiseError and @@ERROR Function	
			Hour 4	**Exception Handling and Transaction Management** • How to Raise Errors Explicitly	

		Day 3	Hour 1	**SQL Server Views and Triggers** • Views in SQL Server • Advantages and Disadvantages of Views	
			Hour 2	**SQL Server Views and Triggers** • Complex Views • Views with Check Option, Check Encryption and Schema Binding • Indexed View	
			Hour 3	**SQL Server Views and Triggers** • Triggers in SQL • DML Trigger Real-Time Examples	
			Hour 4	**SQL Server Views and Triggers** • Short Question/Answer Session	
		Day 4	Hour 1	**Concurrent Transactions and Deadlock in SQL Server**	
			Hour 2	**Concurrent Transactions and Deadlock in SQL Server**	
			Hour 3	**Question / Answer Session** **Lab Session**	
			Hour 4	**Question / Answer Session** **Lab Session** Helpers	

		Day 5	Hour 1	**Summarize SQL Server**	
			Hour 2	**Summarize SQL Server**	
			Hour 3	**Question / Answer Session**	
			Hour 4	**Quiz on SQL Server**	
Week 4	**ASP.NET MVC Core - Introduction**	Day 1	Hour 1	**ASP.NET MVC – Basics** • Introduction to ASP.NET MVC Framework • ASP.NET MVC File and Folder Structure	
			Hour 2	**ASP.NET MVC – Basics** • Controller	
			Hour 3	**ASP.NET MVC – Basics** • View	
			Hour 4	**ASP.NET MVC – Basics** • Model • **Question / Answer Session**	• **Task 4** _Details may be seen at Annexure-I_
		Day 2	Hour 1	**ASP.NET MVC – Basics** • ViewData • ViewBag	
			Hour 2	**ASP.NET MVC – Basics** • Strongly Typed Views • ViewModel	
			Hour 3	**ASP.NET MVC – Basics** • TempData	
			Hour 4	**Question / Answer Session**	
		Day 3	Hour 1	**ASP.NET MVC – Routing** • Routing in ASP.NET MVC	

			Hour 2	**ASP.NET MVC – Routing** • Creating Custom Routes	
			Hour 3	**ASP.NET MVC – Routing** • Route Constraints	
			Hour 4	**ASP.NET MVC – Routing** • Attribute Routing	
		Day 4	Hour 1	**ASP.NET MVC – Routing** • Attribute Routing with Optional Parameter	
			Hour 2	**ASP.NET MVC – Routing** • Route Prefix in ASP.NET MVC Attribute Routing	
			Hour 3	**ASP.NET MVC – Routing** • Route Constraints	
			Hour 4	**ASP.NET MVC – Routing** • Default Route and Route Name	
		Day 5	Hour 1	**ASP.NET MVC – SQL Server** • Entity Framework in ASP.NET MVC	
			Hour 2	**ASP.NET MVC – SQL Server** • Entity Framework in ASP.NET MVC	
			Hour 3	**ASP.NET MVC – SQL Server** • Entity Framework in ASP.NET MVC	
			Hour 4	**ASP.NET MVC – SQL Server** • Entity Framework in ASP.NET MVC	
Week 5	**ASP.NET MVC Core - Continue**	Day 1	Hour 1	**ASP.NET MVC – SQL Server** • ActionLink HTML	• **Task 5**

				Helper	
			Hour 2	**ASP.NET MVC – SQL Server** • Working with Multiple Tables in ASP.NET MVC using Entity Framework	
			Hour 3	**ASP.NET MVC – SQL Server** • Working with Multiple Tables in ASP.NET MVC using Entity Framework	
			Hour 4	**ASP.NET MVC – SQL Server** • Working with Multiple Tables in ASP.NET MVC using Entity Framework	
		Day 2	**Hour 1**	**ASP.NET MVC – SQL Server** • Business Objects as Model	
			Hour 2	**ASP.NET MVC – SQL Server** • FormCollection	
			Hour 3	**ASP.NET MVC – SQL Server** • FormCollection	
			Hour 4	Short Questions / Answer Session	
		Day 3	**Hour 1**	**ASP.NET MVC – SQL Server** • Model Binding	
			Hour 2	**ASP.NET MVC – SQL Server** • UpdateModel and TryUpdateModel	

				Hour 3	**ASP.NET MVC – SQL Server** • Editing a Model	
				Hour 4	Short Questions / Answer Session	
			Day 4	Hour 1	**ASP.NET MVC – SQL Server** • Unintended Updates	
				Hour 2	**ASP.NET MVC – SQL Server** • Bind Attribute	
				Hour 3	**ASP.NET MVC – SQL Server** • Model Binding Using Interface	
				Hour 4	**ASP.NET MVC – SQL Server** • Deleting Database Records in ASP.NET MVC	
			Day 5	Hour 1	**ASP.NET MVC – SQL Server** • CRUD Operations using Entity Framework	
				Hour 2	**ASP.NET MVC – SQL Server** • CRUD Operations using Entity Framework	
				Hour 3	**ASP.NET MVC – SQL Server** • Customizing Auto Generated Index and Create Views • Customizing Auto Generated Edit View	
				Hour 4	QUIZ	

Week 6	ASP.NET MVC Core - Continue	Day 1	Hour 1	**ASP.NET MVC – HTML Helpers** • HTML Helpers • TextBox • DropDownList	
			Hour 2	**ASP.NET MVC – HTML Helpers** • RadioButton • CheckBox • ListBox	
			Hour 3	**ASP.NET MVC – HTML Helpers** • Editor • Password Field and Hidden Field • Templated Helpers	
			Hour 4	**ASP.NET MVC – HTML Helpers** • Customizing Templated Helpers • Custom HTML Helpers	• **Task 6** *Details may be seen at Annexure-I*
		Day 2	Hour 1	**ASP.NET MVC – Attributes** • Attributes in ASP.NET	
			Hour 2	**ASP.NET MVC – Attributes** • Attributes in ASP.NET	
			Hour 3	**ASP.NET MVC – Attributes** • Action Selectors	
			Hour 4	**ASP.NET MVC – Attributes** • Action Verb Selector • Non-Action Selector	
		Day 3	Hour 1	**ASP.NET MVC – Data Annotations** • Data Annotations • Required and StringLength Attribute	

			Hour 2	**ASP.NET MVC – Data Annotations** • Regular Expression Attribute • Range Attribute	
			Hour 3	**ASP.NET MVC – Data Annotations** • Custom Validation Attribute • DataType and Compare Attributes	
			Hour 4	**ASP.NET MVC – Data Annotations** • Validation Message and Validation Summary • Remote Validations • Remote Validation in ASP.NET MVC when JavaScript is Disabled	
		Day 4	Hour 1	**ASP.NET MVC – Action Results** • Action Results in ASP.NET MVC • View Result and Partial View Result in MVC	
			Hour 2	**ASP.NET MVC – Action Results** • JSON Result • JavaScript Result	
			Hour 3	**ASP.NET MVC – Action Results** • File Result • Content Result • Empty Result	
			Hour 4	**ASP.NET MVC – Action Results** • Redirect, RedirectToRoute and RedirectToAction • Status Results	

		Day 5	Hour 1	Multi-Agent RL	
			Hour 2	Cooperative and competitive scenarios	
			Hour 3	Multi-Agent Deep RL	
			Hour 4	Applications of RL in robotics	
Week 7	ASP.NET MVC Core - Continue	Day 1	Hour 1	**ASP.NET MVC – Views** • Partial Views • Different Ways to Render Partial View • Razer View Syntax	
			Hour 2	**ASP.NET MVC – Filters** • Exception Filter • Custom Exception Filter • Error Pages Based on Status Code	
			Hour 3	**ASP.NET MVC – Filters** • ChildActionOnly Attribute • OutputCache Attribute • Custom OutputCache Attribute	• **Task 7** *Details may be seen at Annexure-I*
			Hour 4	**ASP.NET MVC – Filters** • ValidateInput Attribute • RequireHttps Attribute • Custom Action Filters • Filter Overrides • Authorization Filter • Custom Authorization • Custom Authentication Filter	

		Day 2	Hour 1	**ASP.NET MVC – Security** • Authentication and Authorization • Forms Authentication	
			Hour 2	**ASP.NET MVC – Security** • Role-Based Authentication • Role-Based Menus	
			Hour 3	**ASP.NET Identity** • Introduction to ASP.NET Identity • ASP.NET Identity Architecture	
			Hour 4	**ASP.NET Identity** • Getting Started with ASP.NET Identity • Setting up ASP.NET Identity with EF Code-First	
		Day 3	Hour 1	**ASP.NET Identity** • Customizing ASP.NET Identity Tables • Create a User Account	
			Hour 2	**ASP.NET Identity** • Update and Delete a User Account • Update User Password	
			Hour 3	**ASP.NET Identity** • Forget Password • Custom Password Policy	
			Hour 4	**ASP.NET Identity** • Username and Email Policy • Login a User in ASP.NET Identity	

		Day 4	Hour 1	**ASP.NET Identity** • How to Implement Remember Me Feature	
			Hour 2	**ASP.NET Identity** • How to Get the Current Logged in User Id • How to Logout a User	
			Hour 3	**ASP.NET Identity** • How to Lockout a User Account	
			Hour 4	**ASP.NET Identity** • Authorization in ASP.NET Identity • Roles Management	
		Day 5	Hour 1	**ASP.NET Identity** • How to Add, Update, and Delete Roles	
			Hour 2	**ASP.NET Identity** • How to Assign a User to a Role • How to Get a User Roles	
			Hour 3	**ASP.NET Identity** • Role-Based Authorization	
			Hour 4	**QUIZ on ASP.NET MVC Core**	
Week 8	**ASP.NET WEB API**	Day 1	Hour 1	**Introduction & Environment Setup** • Introduction to ASP.NET Core Web API • Environment Setup for ASP.NET Core Web API	• **Task 8** *Details may be seen at Annexure-I*

				Hour 2	• Web API Project using .NET Core CLI • Test ASP.NET Core Web API using Postman	
				Hour 3	**Creating ASP.NET Core Web API Project in Visual Studio 2022**	
				Hour 4	• Web API Files and Folders • Swagger API in ASP.NET Core Web API	
			Day 2	Hour 1	**Converting Console App to Web API App** • Build ASP.NET Core Web API Project From Scratch	
				Hour 2	**Converting Console App to Web API App** • Adding Web Host Builder	
				Hour 3	**Converting Console App to Web API App** • Configuring Startup Class in ASP.NET Core	
				Hour 4	**Converting Console App to Web API App** • Adding Controller in ASP.NET Core	
			Day 3	Hour 1	**ASP.NET Core Web API – Routing** • Routing in ASP.NET Core Web API • Variables and Query Strings in Routing	
				Hour 2	**ASP.NET Core Web API – Routing** • Multiple URLs for a Single Resource using Routing	

					Token Replacement	
				Hour 3	**ASP.NET Core Web API – Routing** • Base Route	
				Hour 4	**ASP.NET Core Web API – Routing** • Route Constraints	
			Day 4	Hour 1	**ASP.NET WEB API – CRUD Operations** • Configuring GET method	
				Hour 2	**ASP.NET WEB API – CRUD Operations** • Configuring UPDATE method	
				Hour 3	**ASP.NET WEB API – CRUD Operations** • Configuring CREATE method	
				Hour 4	**ASP.NET WEB API – CRUD Operations** • Configuring DELETE method	
			Day 5	Hour 1	**Return Types and Status Codes** • Controller Action Return Types	
				Hour 2	**Return Types and Status Codes** • HTTP Status Codes	
				Hour 3	**Return Types and Status Codes** • 200 HTTP Status Code	
				Hour 4	**Microservices using ASP.NET Core**	

Week 9	React JS	Day 1	Hour 1	**ReactJS Introduction** • What is ReactJS	
			Hour 2	**ReactJS Introduction** • Why ReactJS Instead of JavaScript	
			Hour 3	**ReactJS Introduction** • Single Page Applications with ReactJS	
			Hour 4	**ReactJS Introduction** • Single Page Applications with ReactJS	
		Day 2	Hour 1	**JavaScript Refresher** • JavaScript let and const • JavaScript Arrow Functions	• **Task 9** *Details may be seen at Annexure-I*
			Hour 2	**JavaScript Refresher** • Exports and Imports in JavaScript • Classes in JavaScript	
			Hour 3	**JavaScript Refresher** • Properties and Methods in JavaScript • Spread and Rest Operators in JavaScript	
			Hour 4	**JavaScript Refresher** • Destructuring in JavaScript • Reference and Primitive Types Refresher	
		Day 3	Hour 1	**React – Basic** • React Basic Module Introduction • What are ReactJS	

				Components	
			Hour 2	**React – Basic** • Creating a new React Project • Understanding Standard React Project	
			Hour 3	**React – Basic** • Introduction to JSX • How React Works	
			Hour 4	**React – Basic** • Creating Custom Component • Writing More Complex JSX Code	
		Day 4	Hour 1	**React – Basic** • Adding CSS Styling in React Project • Dynamic Data and Working with Expressions in JSX	
			Hour 2	**React – Basic** • How to Make React Component Reusable	
			Hour 3	**React – Basic** • Adding JavaScript Logic to React Components	
			Hour 4	**React – Basic** • Splitting Components into Multiple Components	
		Day 5	Hour 1	**React – Basic** • Composition in React • Summary of React Component	

			Hour 2	**React – Basic** - Working of JSX - Organizing Component Files in React	
			Hour 3	**React – Basic** - Alternative Function Syntax in React	
			Hour 4	**React – Basic** QUIZ on React Basic	
Week 10	**Advanced Computer Vision**	Day 1	Hour 1	**React State and Events** - React State and Event Module Introduction	- **Task 10** *Details may be seen at Annexure-I*
			Hour 2	**React State and Events** - Working with Event Handlers in React	
			Hour 3	**React State and Events** - How Component Functions are Executed - Working with State in React	
			Hour 4	**React State and Events** - Working with React useState Hook	
		Day 2	Hour 1	**React State and Events** - Adding Form Inputs in React	
			Hour 2	**React State and Events** - Listening to User Input in React	
			Hour 3	**React State and Events** - Working with Multiple	

				States in React
				• Using One State Instead Multiple States
			Hour 4	**React State and Events** Discussion
		Day 3	**Hour 1**	**React State and Events** • Updating State that Depends on Previous State
			Hour 2	**React State and Events** • Creating a Shared Handler Function
			Hour 3	**React State and Events** • Handling Form Submission
			Hour 4	**React State and Events** • How to Add Two-Way Binding
		Day 4	**Hour 1**	**React State and Events** • Child-to-Parent Component Communication
			Hour 2	**React State and Events** • Lifting State Up in React
			Hour 3	**React State and Events** • Derived Computed State
			Hour 4	**React State and Events** • Controlled vs Uncontrolled Components and Stateless vs Stateful Components

		Day 5	Hour 1	**Rendering Lists and Conditional Content Module** • Introduction • Rendering Lists of Data	
			Hour 2	**Rendering Lists and Conditional Content Module** • Using Stateful Lists • Understanding Keys	
			Hour 3	**Rendering Lists and Conditional Content Module** • Outputting Conditional Content • Adding Conditional Return Statements	
			Hour 4	**Complete topic revision**	
Week 11	**Connecting Front-End with Back-End**	Day 1	Hour 1	Adding Axios and designing the page	
			Hour 2	Adding Axios and designing the page	
			Hour 3	Cross-Origin Requests (CORS)	
			Hour 4	Discussion	• **Task 11** *Details may be seen at Annexure-I*
		Day 2	Hour 1	Displaying Data from Back-End to Front-End	
			Hour 2	Displaying Data from Back-End to Front-End	
			Hour 3	Displaying Data from Back-End to Front-End	
			Hour 4	Discussion	

		Day 3	Hour 1	Updating Data from Front-End	
			Hour 2	Updating Data from Front-End	
			Hour 3	Updating Data from Front-End	
			Hour 4	Discussion	
		Day 4	Hour 1	Insert Data from Front-End	
			Hour 2	Insert Data from Front-End	
			Hour 3	Insert Data from Front-End	
			Hour 4	Delete Data from Front-End	
		Day 5	Hour 1	Adding SweetAlert for notification	
			Hour 2	Adding SweetAlert for notification	
			Hour 3	Handling errors in the Front-End	
			Hour 4	Publishing the solution in IIS	
Week 12	Freelancing Tools & Techniques	Day 1	Hour 1	Introduction to Freelancing and its Importance	• **Task 12** *Details may be seen at Annexure-I* **Final Project**
			Hour 2	**Fiverr Account** • Create Account • Profile Creation	
			Hour 3	**Fiverr Account** • Adding Skills Set in Fiverr	

			Hour 4	Discussion	
		Day 2	Hour 1	**Create Gigs on Fiverr** • Identify the services you want to offer • Create gigs for each service	
			Hour 2	**Create Gigs on Fiverr** • Optimizing the gig for search engine using relevant key-words	
			Hour 3	**Create Gigs on Fiverr** • Optimize the gig title using the manual method	
			Hour 4	Promote the Gigs on social media and other online platforms	
		Day 3	Hour 1	**Upwork Account** Create an Upwork account and complete the profile, including the bio, skills, and experience	
			Hour 2	**Create project on Upwork**	
			Hour 3	**Create proposal to apply for jobs**	
			Hour 4	Communication Skills Session	
		Day 4	Hour 1	**Final Project** • Discussion and Helping Material	
			Hour 2	**Final Project** • Discussion and Helping Material	

			Hour 3	**Final Project** • Discussion and Helping Material	
			Hour 4	**Final Project** • Discussion and Helping Material	
		Day 5	Hour 1	**Closing Statements and Best Wishes**	
			Hour 2	**Final Exam** Conduct the final paper	
			Hour 3	**Final Exam** Conduct the final paper	
			Hour 4	**Final Exam** Conduct the final paper	

Tasks for Certificate in Microsoft ASP.NET Core MVC and React JS

Task No.	Task	Description	Week
1.	**Interactive Quiz Game**	Develop an interactive quiz game with HTML for the structure, CSS for styling, and JavaScript for quiz logic and user interaction. Provide feedback on correct and incorrect answers.	**Week 1**
2.	**Design a Library System Database**	Design a Database for Library Management with at least 5 tables. Retrieve Information from multiple tables using WHERE Clause, JOINS and Built-in Functions. Also apply Indexing on appropriate columns and evaluate query performance	**Week 2**
3.	**Database Optimization and Automation**	Use the Library Management Database and do the following 1. **Stored Procedures:** • To perform common CRUD operations on key tables in the database. 2. **Views:** • Create views to simplify complex queries. 3. **Triggers:** • Implement triggers to automate specific actions. 4. **Optimization:** • Identify and optimize any existing stored procedures 5. **Error Handling:** • Implement proper error handling mechanisms in your stored procedures and triggers.	**Week 3**
4.	**Building a Simple Library Management System Application using ASP.NET Core MVC**	Design a web application for Library Management System 1. Modeling the Book Table 2. Setting Up Entity Framework 3. Implementing CRUD Operations 4. Routing and Navigation 5. Displaying Books Information 6. Validation 7. Entity Framework Relationships 8. Security Considerations.	**Week 4**
5.	**Working on Library Management System**	Modify the Library Management System with HTML Helper and User SQL Server Database for CRUD Operations using Entity Framework	**Week 5**
6.	**Update Library Management System for Client Side**	Update your Library Management System with AJAX Technologies for View, Update, Delete Functions	**Week 6**

7.	**Securing your Library Management Application**	Apply ASP.NET Core MVC Security Functionalities on your Library Management System	**Week 7**
8.	**Develop and Consume Web API**	Develop ASP.NET Core Web API for Library Management System and Consume it for Web Application	**Week 8**
9.	**Building a simple React Application**	Build a React JS application includes Component Design, State Management, Routing and API Integration	**Week 9**
10.	**Modifying React Application for front-end**	Update your React JS Application that will have UI Implementation, State Management Implementation, Error Handling and Optimization	**Week10**
11.	**Complete Library Management System**	Connect your Back-End SQL Server with Front-End Using ASP.NET MVC and React JS for Library Management System. Use ASP.NET Web APIs for CRUD Operations	**Week11**
12.	**Final Project**	Develop Full Stack Web Application with ASP.NET Core MVC and Web API includes React JS	**Week12**

Motivational Lectures
Microsoft ASP.NET Core and ReactJS

What are the advantages of .NET Core over .NET framework:
https://www.youtube.com/watch?v=Rc-rrH2yJhA

This video provides an overview of the impact that .NET Core brings to the web development over the .NET framework.

How Robotics Will Change the World: https://www.youtube.com/watch?v=UwsrzCVZAb8

This video provides an overview of the impact that robotics is having on society, including in fields such as healthcare, manufacturing, and agriculture.

Learn ASP.NET Core 6.0 - Full Course for Beginners:
https://www.youtube.com/watch?v=LOfXDdqWVWY&list=PL18HZjtdIA4DiYGQj1zst6myBAV E3wgMg

This video set will provide the complete web development using ASP.NET Core.

Introduction to React Js + Installation | Complete React Course:
https://www.youtube.com/watch?v=-mJFZp84TIY&list=PLu0W_9lll9agx66oZnT6IyhcMIbUMNMdt

Complete react course: In this react course, we will see how to use react using projects. React is an amazing library for creating user interfaces.

Workplace/Institute Ethics Guide

Work ethic is a standard of conduct and values for job performance. The modern definition of what constitutes good work ethics often varies. Different businesses have different expectations. Work ethic is a belief that hard work and diligence have a moral benefit and an inherent ability, virtue, or value to strengthen character and individual abilities. It is a set of values-centered on the importance of work and manifested by determination or desire to work hard.

The following ten work ethics are defined as essential for student success:

1. **Attendance:**
    Be at work every day possible, plan your absences don't abuse leave time. Be punctual every day.

2. **Character:**
    Honesty is the single most important factor having a direct bearing on the final success of an individual, corporation, or product. Complete assigned tasks correctly and promptly. Look to improve your skills.

3. **Team Work:**
    The ability to get along with others including those you don't necessarily like. The ability to carry your weight and help others who are struggling. Recognize when to speak up with an idea and when to compromise by blend ideas together.

4. **Appearance:**
    Dress for success set your best foot forward, personal hygiene, good manner, remember that the first impression of who you are can last a lifetime

5. **Attitude:**
    Listen to suggestions and be positive, accept responsibility. If you make a mistake, admit it. Values workplace safety rules and precautions for personal and co-worker safety. Avoids unnecessary risks. Willing to learn new processes, systems, and procedures in light of changing responsibilities.

6. **Productivity:**
    Do the work correctly, quality and timelines are prized. Get along with fellows, cooperation is the key to productivity. Help out whenever asked, do extra without being asked. Take pride in your work, do things the best you know-how. Eagerly focuses energy on accomplishing tasks, also referred to as demonstrating ownership. Takes pride in work.

7. **Organizational Skills:**

Make an effort to improve, learn ways to better yourself. Time management; utilize time and resources to get the most out of both. Take an appropriate approach to social interactions at work. Maintains focus on work responsibilities.

8. **<u>Communication</u>:**

Written communication, being able to correctly write reports and memos. Verbal communications, being able to communicate one on one or to a group.

9. **<u>Cooperation</u>:**

Follow institute rules and regulations, learn and follow expectations. Get along with fellows, cooperation is the key to productivity. Able to welcome and adapt to changing work situations and the application of new or different skills.

10. **<u>Respect</u>:**

Work hard, work to the best of your ability. Carry out orders, do what's asked the first time. Show respect, accept, and acknowledge an individual's talents and knowledge. Respects diversity in the workplace, including showing due respect for different perspectives, opinions, and suggestions.