Lovely Professional University, Punjab

Course Code	Course Title	Lectures	Tutorials	Practicals	Credits	
INT219	FRONT END WEB DEVELOPER	2	0	2	3	
Course Weightage	ATT: 5 CA: 45 ETP: 50					
Course Focus	EMPLOYABILITY,ENTREPRENEURSHIP,SKILL DEVELOPMENT					

Course Outcomes :Through this course students should be able to

CO1 :: understand HTML5 structure and CSS3 principles for responsive web design

CO2 :: apply JavaScript fundamentals to create interactive web pages

CO3 :: analyze advanced JavaScript concepts and asynchronous behavior.

CO4 :: apply the DOM using events, debugging tools, and modern tooling

CO5 :: apply TypeScript features for type-safe web development

CO6 :: analyze code quality using TypeScript, testing, and version control

	TextBooks (T)		
Sr No	**Title**	**Author**	**Publisher Name**
T-1	MASTERING HTML, CSS & JAVA SCRIPT WEB PUBLISHING	LAURA LE MAY, RAFE COLBURN, JENNIFER KYRNIN	BPB PUBLICATIONS

	Reference Books (R)		
Sr No	**Title**	**Author**	**Publisher Name**
R-1	LEARNING TYPESCRIPT	JOSH GOLDBERG	SHROFF/O'REILLY

Relevant Websites (RW)		
Sr No	**(Web address) (only if relevant to the course)**	**Salient Features**
RW-1	https://www.w3schools.com/html/html_intro.asp	HTML
RW-2	https://www.w3schools.com/css/css_intro.asp	CSS
RW-3	https://www.w3schools.com/git/git_intro.asp?remote=github	Git and HitHub
RW-4	https://www.w3schools.com/js/default.asp	Basic JavaScript
RW-5	https://www.w3schools.com/js/js_es6.asp	ES6

RW-6	https://www.geeksforgeeks.org/javascript/how-to-manipulate-dom-elements-in-javascript/	JavaScript DOM manipulation
RW-7	https://www.w3schools.com/typescript/typescript_intro.php	TypeScript fundamentals

Software/Equipments/Databases		
Sr No	**(S/E/D) (only if relevant to the course)**	**Salient Features**
SW-1	https://code.visualstudio.com/	VS code

LTP week distribution: (LTP Weeks)	
Weeks before MTE	7
Weeks After MTE	7
Spill Over (Lecture)	4

Detailed Plan For Lectures

Week Number	**Lecture Number**	**Broad Topic(Sub Topic)**	**Chapters/Sections of Text/reference books**	**Other Readings, Relevant Websites, Audio Visual Aids, software and Virtual Labs**	**Lecture Description**	**Learning Outcomes**	**Pedagogical Tool Demonstration/ Case Study / Images / animation / ppt etc. Planned**	**Live Examples**
Week 1	Lecture 1	HTML5 and CSS3 Foundations(HTML document structure)	T-1	RW-1 SW-1	HTML document structure, Semantic HTML elements, Forms and input controls	Student will be able to understand and implement HTML document structure, Semantic HTML elements, Forms and input controls	Live demonstration	Static and Dynamic websites like google, LPU UMS and Facebook, etc will be discussed
		HTML5 and CSS3 Foundations(Semantic HTML elements)	T-1	RW-1 SW-1	HTML document structure, Semantic HTML elements, Forms and input controls	Student will be able to understand and implement HTML document structure, Semantic HTML elements, Forms and input controls	Live demonstration	Static and Dynamic websites like google, LPU UMS and Facebook, etc will be discussed

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Week 1	Lecture 1	HTML5 and CSS3 Foundations(Forms and input controls)	T-1	RW-1 SW-1	HTML document structure, Semantic HTML elements, Forms and input controls	Student will be able to understand and implement HTML document structure, Semantic HTML elements, Forms and input controls	Live demonstration	Static and Dynamic websites like google, LPU UMS and Facebook, etc will be discussed
	Lecture 2	HTML5 and CSS3 Foundations(Multimedia elements)	T-1	RW-2 SW-1	Multimedia elements, CSS fundamentals, Selectors and specificity	Student will be able to understand and implement Multimedia elements, CSS fundamentals, Selectors and specificity	Live demonstration	Static and Dynamic websites like google, LPU UMS and Facebook, etc will be discussed
		HTML5 and CSS3 Foundations(CSS fundamentals)	T-1	RW-2 SW-1	Multimedia elements, CSS fundamentals, Selectors and specificity	Student will be able to understand and implement Multimedia elements, CSS fundamentals, Selectors and specificity	Live demonstration	Static and Dynamic websites like google, LPU UMS and Facebook, etc will be discussed
		HTML5 and CSS3 Foundations(Selectors and specificity)	T-1	RW-2 SW-1	Multimedia elements, CSS fundamentals, Selectors and specificity	Student will be able to understand and implement Multimedia elements, CSS fundamentals, Selectors and specificity	Live demonstration	Static and Dynamic websites like google, LPU UMS and Facebook, etc will be discussed
Week 2	Lecture 3	HTML5 and CSS3 Foundations(Box model)	T-1	RW-2 SW-1	Box model, Positioning and display properties, Flexbox and Grid basics	Student will be able to understand and implement Box model, Positioning and display properties, Flexbox and Grid basics	Live demonstration	Static and Dynamic websites like google, LPU UMS and Facebook, etc will be discussed
		HTML5 and CSS3 Foundations(Positioning and display properties)	T-1	RW-2 SW-1	Box model, Positioning and display properties, Flexbox and Grid basics	Student will be able to understand and implement Box model, Positioning and display properties, Flexbox and Grid basics	Live demonstration	Static and Dynamic websites like google, LPU UMS and Facebook, etc will be discussed

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Week 2	Lecture 3	HTML5 and CSS3 Foundations(Flexbox and Grid basics)	T-1	RW-2 SW-1	Box model, Positioning and display properties, Flexbox and Grid basics	Student will be able to understand and implement Box model, Positioning and display properties, Flexbox and Grid basics	Live demonstration	Static and Dynamic websites like google, LPU UMS and Facebook, etc will be discussed
	Lecture 4	HTML5 and CSS3 Foundations(Responsive design principles)	T-1	RW-2 RW-3 SW-1	Responsive design principles, Introduction to modern CSS workflows, Version control fundamentals using Git and GitHub	Student will be able to understand and implement Responsive design principles, Introduction to modern CSS workflows, Version control fundamentals using Git and GitHub	Live demonstration	Static and Dynamic websites like google, LPU UMS and Facebook, etc will be discussed
		HTML5 and CSS3 Foundations(Introduction to modern CSS workflows)	T-1	RW-2 RW-3 SW-1	Responsive design principles, Introduction to modern CSS workflows, Version control fundamentals using Git and GitHub	Student will be able to understand and implement Responsive design principles, Introduction to modern CSS workflows, Version control fundamentals using Git and GitHub	Live demonstration	Static and Dynamic websites like google, LPU UMS and Facebook, etc will be discussed
		HTML5 and CSS3 Foundations(Version control fundamentals using Git and GitHub)	T-1	RW-2 RW-3 SW-1	Responsive design principles, Introduction to modern CSS workflows, Version control fundamentals using Git and GitHub	Student will be able to understand and implement Responsive design principles, Introduction to modern CSS workflows, Version control fundamentals using Git and GitHub	Live demonstration	Static and Dynamic websites like google, LPU UMS and Facebook, etc will be discussed
Week 3	Lecture 5	JavaScript Programming Fundamentals(JavaScript syntax and data types)	T-1	RW-4 SW-1	JavaScript syntax and data types, Variables and scope	Student will be able to understand and implement JavaScript syntax and data types, Variables and scope	Live demonstration	Static and Dynamic websites like google, LPU UMS and Facebook, etc will be discussed

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Week 3	Lecture 5	JavaScript Programming Fundamentals(Variables and scope)	T-1	RW-4 SW-1	JavaScript syntax and data types, Variables and scope	Student will be able to understand and implement JavaScript syntax and data types, Variables and scope	Live demonstration	Static and Dynamic websites like google, LPU UMS and Facebook, etc will be discussed
	Lecture 6	JavaScript Programming Fundamentals(Operators and expressions)	T-1	RW-4 SW-1	Operators and expressions, Control flow statements	Student will be able to understand and implement Operators and expressions, Control flow statements	Live demonstration	Static and Dynamic websites like google, LPU UMS and Facebook, etc will be discussed
		JavaScript Programming Fundamentals(Control flow statements)	T-1	RW-4 SW-1	Operators and expressions, Control flow statements	Student will be able to understand and implement Operators and expressions, Control flow statements	Live demonstration	Static and Dynamic websites like google, LPU UMS and Facebook, etc will be discussed
Week 4	Lecture 7	JavaScript Programming Fundamentals(Functions and arrow functions)	T-1	RW-5 SW-1	Functions and arrow functions, Arrays and objects	Student will be able to understand and implement Functions and arrow functions, Arrays and objects	Live demonstration	Static and Dynamic websites like google, LPU UMS and Facebook, etc will be discussed
		JavaScript Programming Fundamentals(Arrays and objects)	T-1	RW-5 SW-1	Functions and arrow functions, Arrays and objects	Student will be able to understand and implement Functions and arrow functions, Arrays and objects	Live demonstration	Static and Dynamic websites like google, LPU UMS and Facebook, etc will be discussed
	Lecture 8	JavaScript Programming Fundamentals(Basic event handling)	T-1	RW-4 SW-1	Basic event handling, Introduction to browser interaction	Student will be able to understand and implement Basic event handling, Introduction to browser interaction	Live demonstration	Static and Dynamic websites like google, LPU UMS and Facebook, etc will be discussed

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Week 4	Lecture 8	JavaScript Programming Fundamentals(Introduction to browser interaction)	T-1	RW-4 SW-1	Basic event handling, Introduction to browser interaction	Student will be able to understand and implement Basic event handling, Introduction to browser interaction	Live demonstration	Static and Dynamic websites like google, LPU UMS and Facebook, etc will be discussed
Week 5	Lecture 9				Visual Implementation			
	Lecture 10	Advanced JavaScript and Asynchronous Programming (Execution context and scope chain)	T-1	RW-5 SW-1	Execution context and scope chain, Closures	Student will be able to understand and implement Execution context and scope chain, Closures	Live demonstration	Static and Dynamic websites like google, LPU UMS and Facebook, etc will be discussed
		Advanced JavaScript and Asynchronous Programming (Closures)	T-1	RW-5 SW-1	Execution context and scope chain, Closures	Student will be able to understand and implement Execution context and scope chain, Closures	Live demonstration	Static and Dynamic websites like google, LPU UMS and Facebook, etc will be discussed
Week 6	Lecture 11	Advanced JavaScript and Asynchronous Programming (Prototype and prototype chain)	T-1	RW-5 SW-1	Prototype and prototype chain, Event loop and concurrency model	Student will be able to understand and implement Prototype and prototype chain, Event loop and concurrency model	Live demonstration	Static and Dynamic websites like google, LPU UMS and Facebook, etc will be discussed
		Advanced JavaScript and Asynchronous Programming (Event loop and concurrency model)	T-1	RW-5 SW-1	Prototype and prototype chain, Event loop and concurrency model	Student will be able to understand and implement Prototype and prototype chain, Event loop and concurrency model	Live demonstration	Static and Dynamic websites like google, LPU UMS and Facebook, etc will be discussed

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Week 6	Lecture 12	Advanced JavaScript and Asynchronous Programming (Promises and asynchronous control flow)	T-1	RW-5 SW-1	Promises and asynchronous control flow, Microtask and macrotask queues	Student will be able to understand and implement Promises and asynchronous control flow, Microtask and macrotask queues	Live demonstration	Static and Dynamic websites like google, LPU UMS and Facebook, etc will be discussed
		Advanced JavaScript and Asynchronous Programming (Microtask and macrotask queues)	T-1	RW-5 SW-1	Promises and asynchronous control flow, Microtask and macrotask queues	Student will be able to understand and implement Promises and asynchronous control flow, Microtask and macrotask queues	Live demonstration	Static and Dynamic websites like google, LPU UMS and Facebook, etc will be discussed
Week 7	Lecture 13	Advanced JavaScript and Asynchronous Programming (ES6+ language features)	T-1	RW-5 SW-1	ES6+ language features, JavaScript modules	Student will be able to understand and implement ES6+ language features, JavaScript modules	Live demonstration	Static and Dynamic websites like google, LPU UMS and Facebook, etc will be discussed
		Advanced JavaScript and Asynchronous Programming (JavaScript modules)	T-1	RW-5 SW-1	ES6+ language features, JavaScript modules	Student will be able to understand and implement ES6+ language features, JavaScript modules	Live demonstration	Static and Dynamic websites like google, LPU UMS and Facebook, etc will be discussed
		SPILL OVER						
Week 7	Lecture 14				Spill Over			
		MID-TERM						
Week 8	Lecture 15	DOM Manipulation and Modern Tooling(Document Object Model (DOM) structure)	T-1	RW-6 SW-1	Document Object Model (DOM) structure, DOM traversal and manipulation	Student will be able to understand and implement Document Object Model (DOM) structure, DOM traversal and manipulation	Live demonstration	Static and Dynamic websites like google, LPU UMS and Facebook, etc will be discussed

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Week 8	Lecture 15	DOM Manipulation and Modern Tooling(DOM traversal and manipulation)	T-1	RW-6 SW-1	Document Object Model (DOM) structure, DOM traversal and manipulation	Student will be able to understand and implement Document Object Model (DOM) structure, DOM traversal and manipulation	Live demonstration	Static and Dynamic websites like google, LPU UMS and Facebook, etc will be discussed
	Lecture 16	DOM Manipulation and Modern Tooling(Dynamic styling and content updates)	T-1	RW-6 SW-1	Dynamic styling and content updates, Event propagation and delegation	Student will be able to understand Dynamic styling and content updates, Event propagation and delegation	Live demonstration	Static and Dynamic websites like google, LPU UMS and Facebook, etc will be discussed
		DOM Manipulation and Modern Tooling(Event propagation and delegation)	T-1	RW-6 SW-1	Dynamic styling and content updates, Event propagation and delegation	Student will be able to understand Dynamic styling and content updates, Event propagation and delegation	Live demonstration	Static and Dynamic websites like google, LPU UMS and Facebook, etc will be discussed
Week 9	Lecture 17	DOM Manipulation and Modern Tooling(Debugging using browser developer tools)	T-1	RW-6 SW-1	Debugging using browser developer tools, Module bundling concepts using modern build tools, Code linting and formatting practices	Student will be able to understand and implement Debugging using browser developer tools, Module bundling concepts using modern build tools, Code linting and formatting practices	Live demonstration	Static and Dynamic websites like google, LPU UMS and Facebook, etc will be discussed
		DOM Manipulation and Modern Tooling(Module bundling concepts using modern build tools)	T-1	RW-6 SW-1	Debugging using browser developer tools, Module bundling concepts using modern build tools, Code linting and formatting practices	Student will be able to understand and implement Debugging using browser developer tools, Module bundling concepts using modern build tools, Code linting and formatting practices	Live demonstration	Static and Dynamic websites like google, LPU UMS and Facebook, etc will be discussed

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Week 9	Lecture 17	DOM Manipulation and Modern Tooling(Code linting and formatting practices)	T-1	RW-6 SW-1	Debugging using browser developer tools, Module bundling concepts using modern build tools, Code linting and formatting practices	Student will be able to understand and implement Debugging using browser developer tools, Module bundling concepts using modern build tools, Code linting and formatting practices	Live demonstration	Static and Dynamic websites like google, LPU UMS and Facebook, etc will be discussed
	Lecture 18	TypeScript Fundamentals (Introduction to TypeScript)	R-1	RW-7 SW-1	Introduction to TypeScript, Type system and annotations	Student will be able to understand and implement Introduction to TypeScript, Type system and annotations	Live demonstration	Static and Dynamic websites like google, LPU UMS and Facebook, etc will be discussed
		TypeScript Fundamentals (Type system and annotations)	R-1	RW-7 SW-1	Introduction to TypeScript, Type system and annotations	Student will be able to understand and implement Introduction to TypeScript, Type system and annotations	Live demonstration	Static and Dynamic websites like google, LPU UMS and Facebook, etc will be discussed
Week 10	Lecture 19	TypeScript Fundamentals (Interfaces and type aliases)	R-1	RW-7 SW-1	Interfaces and type aliases	Student will be able to understand and implement Interfaces and type aliases	Live demonstration	Static and Dynamic websites like google, LPU UMS and Facebook, etc will be discussed
	Lecture 20	TypeScript Fundamentals (Union and intersection types)	R-1	RW-7 SW-1	Union and intersection types	Student will be able to understand and implement Union and intersection types	Live demonstration	Static and Dynamic websites like google, LPU UMS and Facebook, etc will be discussed

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Week 11	Lecture 21	TypeScript Fundamentals (Generics)	R-1	RW-7 SW-1	Generics	Student will be able to understand and implement Generics	Live demonstration	Static and Dynamic websites like google, LPU UMS and Facebook, etc will be discussed
	Lecture 22	TypeScript Fundamentals (Type inference and narrowing)	R-1	RW-7 SW-1	Type inference and narrowing, TypeScript compilation workflow	Student will be able to understand and implement Type inference and narrowing, TypeScript compilation workflow	Live demonstration	Static and Dynamic websites like google, LPU UMS and Facebook, etc will be discussed
		TypeScript Fundamentals (TypeScript compilation workflow)	R-1	RW-7 SW-1	Type inference and narrowing, TypeScript compilation workflow	Student will be able to understand and implement Type inference and narrowing, TypeScript compilation workflow	Live demonstration	Static and Dynamic websites like google, LPU UMS and Facebook, etc will be discussed
Week 12	Lecture 23	TypeScript for Web Applications and Quality Assurance(Type-safe data models)	R-1	SW-1	Type-safe data models, Component and API typing strategies	Student will be able to understand and implement Type-safe data models, Component and API typing strategies	Live demonstration	Static and Dynamic websites like google, LPU UMS and Facebook, etc will be discussed
		TypeScript for Web Applications and Quality Assurance(Component and API typing strategies)	R-1	SW-1	Type-safe data models, Component and API typing strategies	Student will be able to understand and implement Type-safe data models, Component and API typing strategies	Live demonstration	Static and Dynamic websites like google, LPU UMS and Facebook, etc will be discussed
	Lecture 24				Project			

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Week 13	Lecture 25	TypeScript for Web Applications and Quality Assurance(Integration of TypeScript in frontend projects)	R-1	SW-1	Integration of TypeScript in frontend projects	Student will be able to understand and implement Integration of TypeScript in frontend projects	Live demonstration	Static and Dynamic websites like google, LPU UMS and Facebook, etc will be discussed
	Lecture 26	TypeScript for Web Applications and Quality Assurance(Static code analysis)	R-1	SW-1	Static code analysis, Debugging workflows	Student will be able to understand and implement Static code analysis, Debugging workflows	Live demonstration	Static and Dynamic websites like google, LPU UMS and Facebook, etc will be discussed
		TypeScript for Web Applications and Quality Assurance(Debugging workflows)	R-1	SW-1	Static code analysis, Debugging workflows	Student will be able to understand and implement Static code analysis, Debugging workflows	Live demonstration	Static and Dynamic websites like google, LPU UMS and Facebook, etc will be discussed
Week 14	Lecture 27	TypeScript for Web Applications and Quality Assurance(Testing fundamentals)	R-1	SW-1	Testing fundamentals, Code quality and maintainability practices	Student will be able to understand and implement Testing fundamentals, Code quality and maintainability practices	Live demonstration	Static and Dynamic websites like google, LPU UMS and Facebook, etc will be discussed
		TypeScript for Web Applications and Quality Assurance(Code quality and maintainability practices)	R-1	SW-1	Testing fundamentals, Code quality and maintainability practices	Student will be able to understand and implement Testing fundamentals, Code quality and maintainability practices	Live demonstration	Static and Dynamic websites like google, LPU UMS and Facebook, etc will be discussed
		SPILL OVER						
Week 14	Lecture 28				Spill Over			
Week 15	Lecture 29				Spill Over			
	Lecture 30				Spill Over			

Scheme for CA:

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CA Category of this Course Code is:A0202 (2 out of 2)

Component	Weightage (%)	Mapped CO(s)
Project	50	CO1, CO2, CO3, CO4, CO5, CO6
Visual Implementation	50	CO1, CO2, CO3

Details of Academic Task(s)

Academic Task	Objective	Detail of Academic Task	Nature of Academic Task (group/individuals)	Academic Task Mode	Marks	Allottment / submission Week
Project	To access the students web designing skills in real world applications	The student will develop project using HTML, CSS, JavaScript/TypeScript. Category 1: Problem Statement–Based Projects Evaluation Rubrics: • Functionality • User Interface • Code Quality, Implementation & Presentation • Video Presentation • Social Media Presence Category 2: Revenue-Generating Projects Evaluation Rubrics: • Functionality • User Interface • Code Quality, Implementation & Presentation • Revenue Generation • Video Presentation • Social Media Presence	Individual	Online	30	3 / 12
Visual Implementation	To assess the students skills in HTML, CSS and JavaScript	The student will design a responsive website using HTML, CSS and JavaScript along with its ES6 features	Individual	Online	30	4 / 5