**Module 1: CSS Fundamentals**

**1.1 Introduction to CSS**

* What is CSS?
* Inline, Internal, and External CSS
* CSS Syntax and Selectors

**1.2 CSS Box Model**

* Margin, Padding, Border
* box-sizing: border-box vs content-box
* Width and Height Behaviour

**1.3 CSS Units & Values**

* Absolute (px, pt, in, cm, mm)
* Relative (em, rem, %, vw, vh, vmin, vmax)
* When to use which unit

**1.4 Text & Font Styling**

* font-family, font-size, font-weight
* line-height, letter-spacing, text-align
* Google Fonts and Custom Fonts (@font-face)

**1.5 Colors & Backgrounds**

* Color formats (hex, rgb, rgba, hsl, hsla)
* Background properties (background-image, background-size, gradients)

**Module 2: CSS Layouts**

**2.1 Display Property**

* block, inline, inline-block
* none vs visibility: hidden

**2.2 Positioning**

* static, relative, absolute, fixed, sticky
* z-index and stacking context

**2.3 Flexbox**

* Flex container vs flex items
* flex-direction, justify-content, align-items, gap
* Flex grow, shrink, and basis

**2.4 CSS Grid**

* Grid container vs grid items
* grid-template-columns, grid-template-rows
* grid-column, grid-row, grid-area
* Responsive grids with auto-fill and minmax()

**2.5 Floats & Clearfix (Legacy, but good to know)**

* How floats work
* Issues with floats and the clearfix hack

**Module 3: Responsive Design**

**3.1 Media Queries**

* Breakpoints and mobile-first vs desktop-first
* min-width, max-width, and logical operators

**3.2 Responsive Units & Techniques**

* Fluid layouts with %, vw, vh
* clamp(), min(), max() for dynamic sizing

**3.3 Responsive Images**

* srcset and sizes attributes
* picture element for art direction

**3.4 Mobile-First vs Desktop-First Strategies**

* Pros and cons of each approach

**Module 4: Advanced CSS**

**4.1 CSS Variables (Custom Properties)**

* Declaring and using variables
* Scoping and fallback values

**4.2 Transitions & Animations**

* transition (property, duration, timing function)
* Keyframe animations (@keyframes)
* Performance considerations

**4.3 Transformations**

* translate(), rotate(), scale(), skew()
* 3D transforms (perspective, rotateX/Y/Z)

**4.4 Filters & Blend Modes**

* blur(), brightness(), contrast()
* mix-blend-mode and background-blend-mode

**4.5 Clip-path & Masks**

* Creating custom shapes with clip-path
* SVG masks

**Module 5: CSS Architecture & Best Practices**

**5.1 BEM (Block Element Modifier) Methodology**

* Naming conventions for maintainability

**5.2 CSS Preprocessors (SASS/SCSS)**

* Variables, nesting, mixins, functions
* Partial files and modularization

**5.3 CSS-in-JS (Styled Components, Emotion)**

* Pros and cons of CSS-in-JS
* Dynamic styling with JavaScript

**5.4 Performance Optimization**

* Reducing render-blocking CSS
* Critical CSS and lazy loading
* Minimizing repaints and reflows

**5.5 Cross-Browser Compatibility**

* Vendor prefixes (-webkit-, -moz-)
* Feature detection with @supports
* Polyfills for older browsers

**Module 6: Modern CSS Features**

**6.1 CSS Container Queries**

* @container for component-based responsiveness

**6.2 Subgrid (CSS Grid Level 2)**

* Nesting grids with consistent alignment

**6.3 Logical Properties (**margin-inline**,**padding-block**)**

* Supporting RTL (Right-to-Left) and multilingual layouts

**6.4 Scroll Snap**

* Creating scrollable sections with snap points

**6.5 Viewport Units (**svh**,**lvh**,**dvh**)**

* Handling mobile viewport quirks

**Final Project & Assessment**

* Build a responsive portfolio website using all learned concepts
* Implement animations, grid layouts, and CSS variables
* Optimize for performance and cross-browser compatibility