



# UTPAL KANT

## EDUCATION

**BHU (2024)**

Computer applications



# Website designing

## TAUGHT BY

*Utpal Kant*

## COURSE FEE

₹0/-

# Web Development syllabus



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## WEB DEVELOPMENT FUNDAMENTALS

- ◆ Understand how websites work and how HTML, CSS and JavaScript contribute.
- ◆ Understand how the internet works.
- ◆ Start coding with HTML, CSS, and JavaScript.
- ◆ Learn and understand git, GitHub and version control.
- ◆ Use the Unix command line to become a power user and write bash commands.
- ◆ Learn key troubleshooting and debugging skills to apply to your projects.

## HTML 5

- ◆ Learn the anatomy of HTML syntax to structure your websites.
- ◆ Understand the HTML boilerplate and HTML doctypes.
- ◆ How to structure text in HTML.
- ◆ How to structure HTML lists to create unordered and ordered lists.
- ◆ How to insert images using HTML
- ◆ How to create hyperlinks using anchor tags.
- ◆ Understand how to use HTML tables for content.
- ◆ How to use tables for layout.
- ◆ Learn HTML best practices.
- ◆ Understand about HTML forms and create a simple contact me form.
- ◆ HTML Divs and how to separate content for CSS styling.

## CSS 3

- ◆ Understand what are cascading style sheets and how you can use it to style your website.
- ◆ How to use CSS selectors and properties.
- ◆ Learn about how to use inline, internal and external CSS.
- ◆ Understand CSS coding best practices.
- ◆ Learn about CSS sizing methods.
- ◆ Learn the anatomy of CSS syntax and structure.
- ◆ CSS specificity and implementing style hierarchy.
- ◆ Class vs. Ids and how to target each.
- ◆ CSS display and how to implement layout.
- ◆ How to use CSS static, relative and absolute positioning systems.
- ◆ Font styling using CSS and web safe fonts.
- ◆ Centering elements using CSS.
- ◆ Website design fundamentals and typography.
- ◆ How to use CSS float and clear.
- ◆ How combine CSS selectors and understand selector priority.

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## BOOTSTRAP 4

- ◆ Learn the fundamentals of implementing responsive web design.
- ◆ How to use Balsamiq to mockup and wireframe websites.
- ◆ The fundamentals of UI design for websites.
- ◆ How to install the Bootstrap framework.
- ◆ Understanding the Bootstrap grid layout system.
- ◆ How to use bootstrap containers to layout your website easily.
- ◆ Learn to use other Bootstrap components such as buttons.
- ◆ Adding symbols using Font Awesome.
- ◆ Learn to use Bootstrap carousels.
- ◆ Add Bootstrap cards to your website.
- ◆ Using Bootstrap navigation bars.

## JAVASCRIPT ES 6

- ◆ The Fundamentals of Code
- ◆ Starting code with alerts and prompts.
- ◆ Understand Variables and Data Types in JavaScript
- ◆ Variable naming in JS
- ◆ Working with strings and numbers
- ◆ Randomisation and logical operators
- ◆ Loops, collections and Conditionals.
- ◆ Functions and invocation patterns
- ◆ Discussion of ECMAScripts
- ◆ Intermediate JavaScript
- ◆ Learn to use JS Expressions, Operators, Statements and Declarations
- ◆ Object-Oriented Programming
- ◆ JS Objects and Prototypes
- ◆ `This`, Scope and Closures
- ◆ Objects and Prototypes
- ◆ Refactoring and Debugging

## DOCUMENT OBJECT MODEL (DOM)

- ◆ Learn the tree structure of HTML based websites.
- ◆ Traverse through the document using object notation.
- ◆ Separation of concerns and coding best practices.
- ◆ Manipulate and change the HTML elements using your understanding of the DOM.

## JQUERY

- ◆ Installing and using the jQuery framework.
- ◆ Learning about jQuery functionality

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- ◆ Introduction to functions in jQuery
- ◆ Manipulating text, styles and attributes with jQuery
- ◆ Create animations and customisations with jQuery
- ◆ Use your jQuery knowledge to make your website interactive
- ◆ Responding to user initiated events with jQuery

## THE UNIX COMMAND LINE

- ◆ How to use basic bash commands in a Unix/Linux Terminal.
- ◆ How to manipulate files and folders without needing a graphical user interface.
- ◆ How to download and install to your computer using command line.

## GIT GITHUB AND VERSION CONTROL

- ◆ Using git for version control and collaboration
- ◆ Git forking, branching and cloning
- ◆ Using GitHub as a remote repository
- ◆ Checkout and rolling back changes with git
- ◆ Using git and GitHub with Xcode

## NODE.JS

- ◆ Explore the components of back-end development, working with an MVC framework
- ◆ Apply concepts like data types, objects, methods, object-oriented programming, and classes in the context of back-end development.
- ◆ Server-Side JavaScript
- ◆ Using Node on the command line
- ◆ NPM
- ◆ JavaScript Build Processes
- ◆ Event Loop and Emitters
- ◆ File System Interaction
- ◆ Modules
- ◆ Native Node drivers

## EXPRESS.JS

- ◆ Understand how to install and use express in Node applications
- ◆ Creating Node and Express based servers
- ◆ RESTful Routing with Express
- ◆ Understand and use middleware for Node applications

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## Databases



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### APPLICATION PROGRAM INTERFACES (APIS)

- ◆ Understand what APIs are and how they work.
  - ◆ HTTP in Depth
  - ◆ Calling APIs
  - ◆ Reading API documentation
  - ◆ Basic API Authentication
  - ◆ Server to server communication
- JSON vs. XML, sending data over the wire.

### EJS

- ◆ Understand what EJS does and how to use it with Node and Express.
- ◆ Templating with EJS
- ◆ Running code in EJS templates
- ◆ Passing data from server to template and vice versa
- ◆ Creating layouts/partials with EJS

### DATABASE FUNDAMENTALS

- ◆ Data Relationships
- ◆ Designing a Data Model
- ◆ Relational Databases
- ◆ Alternative Databases
- ◆ Entity Relationship Modelling (ERM) and Object Relational Mapping (ORM)

### SQL DATABASES

- ◆ Working with Database Schemas
- ◆ Create-Read-Update-Destroy (CRUD)
- ◆ Database Joins
- ◆ Querying SQL databases

### NOSQL DATABASES WITH MONGODB AND MONGOOSE

- ◆ Serialization
- ◆ How to model NoSQL data
- ◆ Document Databases (MongoDB)
- ◆ Create-Read-Update-Destroy (CRUD)
- ◆ NoSQL Best Practices
- ◆ Mongo Shell and command line use
- ◆ Installing MongoDB
- ◆ Mapping relationships with MongoDB
- ◆ Using an object-data modelling library (Mongoose) to work easily with your data.

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## DEPLOYMENT

- ◆ Understand hosting and deployment.
- ◆ Hosting static websites with GitHub Pages.
- ◆ Deploying server based applications with Heroku.
- ◆ Deploying Databases with Mongo Atlas.

## BUILDING RESTful APIs

- ◆ Understand REST and guiding principles behind API design.
- ◆ Learn to work with a MongoDB GUI Robo 3T
- ◆ Implementing GET, POST, PUT, PATCH and DELETE by creating a public API from scratch.
- ◆ Understand and use chained route handlers from Express.

## AUTHENTICATION and SECURITY

- ◆ Understand the need for authentication and keeping user details secure.
- ◆ Learn about Encryption and use encryption to keep your database secure.
- ◆ Learn and implement Hashing and Salting with bcrypt
- ◆ Using Sessions and Cookies to persist user log in sessions.
- ◆ Setting up local authentication from scratch.
- ◆ Implementing Passport to authenticate users quickly and effectively.
- ◆ Understand and use environment variables to keep secret keys secure.
- ◆ Understand and use OAuth 2.0 to log in users using Google and Facebook.

## REACT.JS

- ◆ Learn front-end development with React.
- ◆ Understand when and how to use React Components.
- ◆ Learn to pass Props and work with them.
- ◆ Learn to write JSX and understand JSX syntax.
- ◆ Learn about the React DOM.
- ◆ Learn State Management in React.
- ◆ Learn about React Hooks.
- ◆ Learn about conditional rendering in React.
- ◆ Understand the difference between class and functional components.

## JAVASCRIPT ES 6

- ◆ Arrow Functions
- ◆ Map/Filter/Reduce
- ◆ Find/FindOne/FindIndex
- ◆ Import/Export and Modules
- ◆ Object and Array Destructuring
- ◆ Spread Operator