# **JavaScript**

# Lesson 1

**Data structures**

* Objects as associative arrays
* for
* Objects: pass-by-reference
* Arrays with numerical indexes

**Arrays**

* Arrays: methods
* Array: sort methods
* Pseudo-array “arguments”
* Date and Time

# Lesson 2

**Closures and scope**

* Global object
* Closure, functions inside
* [[Scope]] for a new Function
* Local variables for the object
* Modules via the closure

# Lesson 3

**Object methods and context**

* Object methods, this
* Transformation of objects: toString and valueOf
* Creating objects using "new"
* Descriptors, getters and setters of properties
* Static and factory methods

# Lesson 4

* A clear indication of this: "call", "apply"
* Binding and currying context: "bind"
* Wrapper, decorators
* Practice

# Lesson 5

**Other possibilities**

* Data types: [[Class]], instanceof
* JSON, the toJSON method
* setTimeout and setInterval
* Run code from strings: eval
* Catching errors, try ... catch

# Lesson 6

Document and page objects

* Environment: DOM, BOM and JS
* The DOM tree
* Work with the DOM from the console
* Navigation through DOM elements
* Search: getElement\* and querySelector\*
* The properties of the nodes: the type tag and content
* Modern DOM: polyfills
* The attributes and DOM properties
* The methods contains and compareDocumentPosition

# Lesson 7

* Adding and removing nodes
* Multiple ingestions: insertAdjacentHTML and DocumentFragment
* The method document.write
* Styles, getComputedStyle
* Dimensions and scrolling elements
* The size and scroll the page
* The coordinates in the window
* The coordinates in the document

# Lesson 8

**Basic of events**

* Introduction to browser events
* The order of event processing
* The event object
* Surfacing and intercepting
* The acceptance of design "behavior"
* Generating events on the elements

# Lesson 9

**Events**

* Mouse: clicks the button, the coordinates
* Mouse: cancel selection, items not selectable
* Mouse: movement of mouseover/out, mouseenter/leave
* Mouse: Drag'n'drop
* Mouse: the scroll wheel, the wheel event
* Scrolling: the scroll event
* Keyboard: keyup, keydown, keypress
* Download document: DOMContentLoaded, load, beforeunload, unload
* Loading of scripts, images, iframes: onload and onerror

# Lesson 10

**AJAX**

* The Basics Of XMLHttpRequest
* XMLHttpRequest POST, forms and encoding
* XMLHttpRequest: cross-domain requests
* The JSONP Protocol

# Practice (one week)

# **Angular.js**

# Lesson 11

**Introduction to Angular**

* Course Introduction
* Module Introduction
* Course Updates
* Introduction to Angular
* Angular Architecture
* Hello World in Angular
* The Angular Event Reg Application

# Lesson 12-13

**Angular Controllers & Markup**

* Creating the Node Server for app
* Angular Controllers & Scope
* Displaying Repeating Information
* Demo Handling Events
* Built-in Directives
* Event Directives
* Other Directives
* IE Restrictions with Angular
* Expressions
* Filters
* Built-in Filters
* Writing Custom Filters
* Two Way Binding
* Validation

# Lesson 14-15

**Creating and Using Angular Services**

* Angular Services
* Creating Custom Service
* Built-In Angular Services
* Using Angular's $http Service
* Updating a Node Server for JSON Requests
* Using $http Promises
* Using Angular's $resource Service
* Using Angular's $anchorScroll Service
* Using Angular's $cacheFactory Service
* Using Angular's $compile Service
* Using Angular's $parse Service
* Using Angular's $locale Service
* Using Angular's $timeout Service
* Using Angular's $exceptionHandler Service
* Using Angular's $filter Service
* Using Angular's $cookieStore Service
* Practice

# Lesson 16

**Angular Routing**

* Angular Routing
* Single Page Applications
* Browser History
* Creating a Default Route
* Accessing Parameters from the Route
* Using Angular's $route Service
* Enabling HTML5 Routing
* Template and Resolve Properties
* Using Angular's $location Service

# Lesson 17-18

**Creating Custom Angular Directives**

* Angular Directives
* Isolating Directive Scope
* Isolate Scope Bindings
* Handling Events with Directives
* Observing and Responding to Changes
* Using Controllers within Directives
* Sharing Directive Controllers via Require
* Directive Priority and using Terminal
* Using Require with Nested Directives
* Understanding Transclusion
* Using Compile to Transform the DOM
* Practice

# Practice (one week)

# **React.js**

# Lesson 1*9*

**Introduction to React**

* Basic concepts
* Advantages and disadvantages
* Displaying data
* JSX Syntax

**React Components**

* React components and HTML tags
* Creating components
* Component Properties
* Namespaced Components
* JavaScript Expressions
* JSX Spread Attributes
* Custom HTML Attributes
* Practice

# Lesson 20

* Multiple Components
* Children
* Stateful Children
* Dynamic Children
* Reusable Components
* Prop Validation
* Prop Values
* Transferring Props
* Interactive Props
* Uncontrolled Components
* Lifecycle of react components

# Lesson 21

**Events**

* SyntheticEvent
* Event pooling
* Supported Events
* Keyboard Events
* Focus Events
* Form Events
* Mouse Events
* Selection Events
* UI Events
* Interactivity and Dynamic UIs
* Event Handling and Synthetic Events
* Event Delegation

# Lesson 22

**ES6/7**

* let
* const
* Template Strings
* Concise Object Methods
* Arrow Functions
* Classes
* Object Destructuring
* Concise Objects
* Modules
* Default Parameters
* Native Promises
* Async/Await
* Spread Operator
* Rest Parameters

# Lesson 23

* Npm
* Webpack
* Browserify
* Practice

# Lesson 24

**Routing**

* Declarative Routing
* Route Configurations
* Route Matching
* Animating Route Transitions
* Query Parameters
* Code Splitting

# Lesson 25

**Building app**

* Flux-architecture
* Structure and Data Flow
* A Single Dispatcher
* Stores
* Views and Controller-Views
* Actions
* Practice

# Lesson 26

**Redux**

* The functional approach to Redux.js
* Redux dev tools
* Features Redux.js
* Actions and functions
* Synchronous stream with Redux
* Asynchronous actions in Redux
* Redux with react-router
* Using Redux for applications

# Practice (one week)

# **Node.js**

# Lesson 27

**Introduction**

* Introduction to Node.js and NPM
* Advantages and disadvantages
* Installing node.js
* Node modules
* Working methods with modules
* Examples.
* Practice.

# Lesson 28

**Console program**

* The standard library and functions
* Console program
* Processing options on startup
* Working with variables
* The npm package manager
* Useful library

# Lesson 29

**Working with network requests**

* The documentation for the http
* Processing incoming Web requests
* Outgoing requests
* Examples

# Lesson 30

**Framework Express**

* Introduction to the framework express.js
* Create a skeleton of the website using express.js
* Web services
* Working with errors

# Lesson 31

**Working with MySQL**

* Work with MySQL using a node-mysql
* Creating and using modules
* Creating TODO-application (input and display items)
* Examples

# Lesson 32

**Authentication and authorization**

* Continued development of TODO-application
* Editing and deleting items
* Work with cookies and sessions

# Lesson 33

**REST API**

* Creating the cross-source API using REST API + CORS
* Creating a REST API using restify
* Using the REST API

# Lesson 34

**WebSockets**

* Working with WebSockets through socket.io
* Socket.io option
* Creating a simple chat using socket.io
* Professional hosting node.js,

# Practice (one week)