**NODE.JS and AVA framework**

**PREREQUISITES:**

* Students taking this course should have JavaScript programming experience.

**DURATION: 3 Days**

**DETAILED COURSE OUTLINE**

**JAVASCRIPT Basics**

* JavaScript Syntax
  + Basic Rules
  + Dot Notation
  + Square Bracket Notation
* JavaScript Variables
  + A Loosely-typed Language
  + Storing User-Entered Data
* Arrays
  + Associative Arrays
  + Array Properties and Methods
* JavaScript Objects, Methods and Properties
  + Methods
  + Properties
* JavaScript Operators
* JavaScript Functions
* Built-in functions and classes
  + Number(object)
  + String(object)
  + isNaN(object)
  + parseFloat() and parseInt()
* typeof Operator
* Object oriented JavaScript

**INTRO TO NODE.JS**

* RAM vs. I/O latency
* Blocking vs. Non-Blocking
* Event-driven Programming
* Event Loop
* Blocking The Event Loop
* Node.js Philosophy

**INSTALLING NODE.JS**

* Download and Install
* Node REPL (read-eval-print-loop)
* First Hello World

**MODULES AND NPM**

* Anatomy of a module
* Private code
* Accessing and using modules
* npm commands
* package.json

**THE CALLBACK PATTERN**

* What are callbacks
* Callback-last
* Error-first

**EVENTS**

* When to use Event Emitters
* Binding Functions to Events
* Event Requests
* Event Listening

**ERROR HANDLING**

* Callbacks: Error-first
* Errors in Event Emitters
* Uncaught Exceptions
* Using Domains

**FILE SYSTEM**

* Synchronous vs. asynchronous I/O
* Path and directory operations
* \_dirname and filename
* Asynchronous file reads and writes

**STREAMS**

* What are streams
* Read and Write Stream API
* Flow Control
* Piping
* Duplex Stream
* Transform Stream

**CONNECTING TO DATABASES**

* No SQL and Document Stores
* Relational DBs

**HTTP MODULE**

* The HTTP protocol
* Building an HTTP server
* Rendering a response
* Processing query strings
* Using Representational State Transfer
* Using the express module
* Building a RESTful service using Node, Express and Mongodb

**AVA FRAMEWORK**

* Why AVA?
* Writing tests
* Execution context
* Assertions
* Snapshot testing
* Command line (CLI)
* Configuration
* Test timeouts