

COM644 Full Stack Web and App Development - Lab Schedule 2019

WEEK			A. NODE.JS and EXPRESS.JS		
1			A1. Introducing Node - A first application; require and Module.exports; callback functions; blocking vs non-blocking		A2. npm - The Node Package Manager - Introduction to npm; package.json; installing dependencies; understanding version numbers; running scripts
2			A3. Express - listening on a port; using application variables; defining routes, returning status codes and data; Serving static files - CSS, images, Javascript		A4. Middleware and Routing - Express middleware; the Express Router - instantiating, applying and testing the router
3			A5. Defining and Using Controllers - creating an API, define and export functions, map controllers to routes, get & return data; Using URL parameters		A6. Passing Data through Express Applications - QueryStrings and POSTed forms
WEEK			B. MONGODB		
4			B1. NoSQL and MongoDB - Introduction to NoSQL databases; NoSQL vs Relational; Collections in MongoDB; JSON and BSON; the MongoDB Shell; creating, listing and retrieving collections and documents		B2. MongoDB Commands - querying the database to find documents; sorting results; updating document; deleting documents; Exporting and importing data
5			B3. MongoDB and Node - Connecting a Node.JS application to a MongoDB database; creating a reusable connection; accessing the connection from controllers; Querying the database from Node.JS; returning single/multiple documents; Adding documents		B4. Mongoose and RESTful APIs - URL patterns; GET/POST/PUT/DELETE; Using Mongoose; database connections; data structures with Mongoose schemas; nested schemas; geo-location coordinates; spherical index for geo-location data
6			B5. Mongoose and Information Retrieval - Creating GET routes with Mongoose queries; finding documents and subsets; finding sub-documents; returning multiple and individual results; Queries based on geo-location data; Error trapping		B6. Mongoose and Information Update - Creating new documents and sub-documents; updating existing documents and sub-documents; deleting documents and sub-documents
WEEK			MID-TERM ASSESSMENT		
7			Catch-up		Lab-based Coursework
WEEK			C. ANGULAR		
8			C1. Introducing Angular - Structure of an Angular app; introducing TypeScript; components; data binding		C2. Angular application structure - Using Directives; ngIf and ngFor; ngClass and ngStyle; setting up a front-end for a single-page app; creating components and models
9			C3. Components and Data Binding - splitting apps into components, binding to custom properties and events; using lifecycle hooks; adding navigation		C4. Directives and Services - creating an attribute directive; using HostListener and HostBinding; using ngSwitch; services and dependency injection
10			C5. Routing, Observables and Forms - managing a router; programmatic navigation and route parameters; redirecting and wildcard routes; custom observables; handling Angular forms; using pipes		C6. HTTP requests and User Authentication - sending GET and PUT requests; authentication and JWT; login and logout
WEEK			FINISHING OFF		
11			Coursework workshop		Coursework workshop