Course 1 Outline

Node and Express

* Day 1 (8 hours)
  + [Unit 1A (2 hours): Node.js Overview and Environment Set Up](https://drive.google.com/file/d/1gpjKqG-HgTNJ-xWz9LsNIMYGQc4goUjT/view?usp=sharing) ***(Rachel)***
    - Lecture (30 min)
      * Node.js Overview
      * REPL
      * Environment Set Up
      * Basic JavaScript Syntax Review
        + Variables and Scope
        + Control Flow
        + Data Structures
        + Functions
      * ES6 JavaScript Features
        + String functions (map, filter, sort)
        + Template Literals
        + Spread Operator
        + Destructuring
        + Arrow Functions
      * Require and Export
    - Lab (1 hr 30 min)
      * Students will set up a local Node.js development environment and create a couple utility functions which they will import into a main function
  + [Unit 1B (2 hours): Core Node Modules](https://drive.google.com/file/d/1wt2rZ-5g1nOg0x6SqBSYkD1Cv_c2KE7_/view?usp=sharing) ***(Brad)***
    - Lecture (30 min)
      * Core Node Modules
        + fs
        + Path
      * NPM
      * Globals
      * Command Line Arguments
      * package.json
    - Lab (1 hr 30 min)
      * The student will read from a file, manipulate the data, and then write to a new file using Node.js core modules
  + [Unit 1C (2 hours): Asynchronous JavaScript](https://drive.google.com/file/d/1hD6eoYd8lZDH_kmNwSuOGvhuWK0ZvwOx/view?usp=sharing) ***(Rachel)***
    - Lecture (30 min)
      * The Event Loop
      * Callbacks
      * setTimeout and setInterval
      * Promises
      * Async and Await
      * Fetch API
    - Lab (1 hr 30 min)
      * The student will learn how to Fetch data from an external API and handle the results
  + [Unit 1D (2 hours) Basic Web APIs with Node.js and Express](https://drive.google.com/file/d/10VNbAkactmyWzHOS42gMNarSlG4tpv8b/view?usp=sharing) ***(Brad)***
    - Lecture (30 min)
      * Express
      * Basic Routing
      * URL Parameters
      * Get Requests
      * JSON
      * Serving static assets
    - Lab (1 hr 30 min)
      * The student will set up a few GET endpoints that serve text, JSON, and static assets using Node.js and Express
* Day 2 (8 hours)
  + [Unit 2A (2.5 hours): More about Basic Web APIs with Node.js and Express](https://drive.google.com/file/d/1syOWlIq8xoe188fGxgQbpWQ44W7zaFU3/view?usp=sharing) ***(Brad)***
    - Lecture (30 min)
      * Post, Put, and Delete Requests
      * Querystrings
      * Middleware
      * CORS
    - Lab (2 hrs)
      * The student will create a CRUD Web API that writes to a file for memory instead of a database
  + [Unit 2B (2.5 hours): Integrating with a Database](https://drive.google.com/file/d/1gUMQ-NoPrc2pUGeqGZnG89ee2FW2KaZ0/view?usp=sharing) ***(Rachel)***
    - Lecture (30 min)
      * Reading and Writing to a NoSQL database
      * Using a ORM/ORD
    - Lab (2 hrs)
      * The student will transition their CRUD Web API to write to a database instead of a file
  + [Unit 2C (3 hours): Authentication and Authorization with Express](https://drive.google.com/file/d/17ltn8UWKECay50taaVp6L19AGEddagPs/view?usp=sharing) ***(Brad)***
    - Lecture (30 min)
      * Authentication
      * Authorization
      * JSON Web Tokens
      * Bcrypt
    - Lab (2 hr 30 min)
      * The student will build a web app that allows new users to sign up, authenticates existing users via username/password so they can access protected resources
* Day 3 (8 hours)
  + [Unit 3A (2 hours): Testing with Jest](https://drive.google.com/file/d/1INBl-t783rp_MZ75j490o5R_wItgm9cd/view?usp=sharing) ***(Rachel)***
    - Lecture (30 min)
      * Testing with Jest
      * Debugging an Express App
    - Lab (1 hr 30 min)
      * User will write test cases to verify their CRUD API using Jest
  + [Unit 3B (2 hours): Circle CI](https://drive.google.com/file/d/1RxY_fzYo31eAkIQIqj1UI3lrz81OMvT5/view?usp=sharing) ***(Brad)***
    - Lecture (30 min)
      * CI/CD explanation
      * Integrating with CircleCI
      * Reading and Debugging from CircleCI reports
    - Lab (1 hr 30 min)
      * The student will set up a CI/CD pipeline with node.js and express
  + [Final Project ( 4 hours)](https://drive.google.com/file/d/1Os4mqzWqCDVFOOIAn6TK_CVpfbfPPEQI/view?usp=sharing) ***(Rachel)***
    - Project Overview (30 min)
      * Review what we learned so far and go over project details
    - Project Time(3 hours and 30 min)
      * Student will be given requirements to build an API and will set up a CI/CD pipeline to build and deploy it