Building Modern Web Applications & Services using Node.js

Waterford Institute *of* Technology

INSTITIÚID TEICNEOLAÍOCHTA PHORT LÁIRGE

OTH

REGENSBURG

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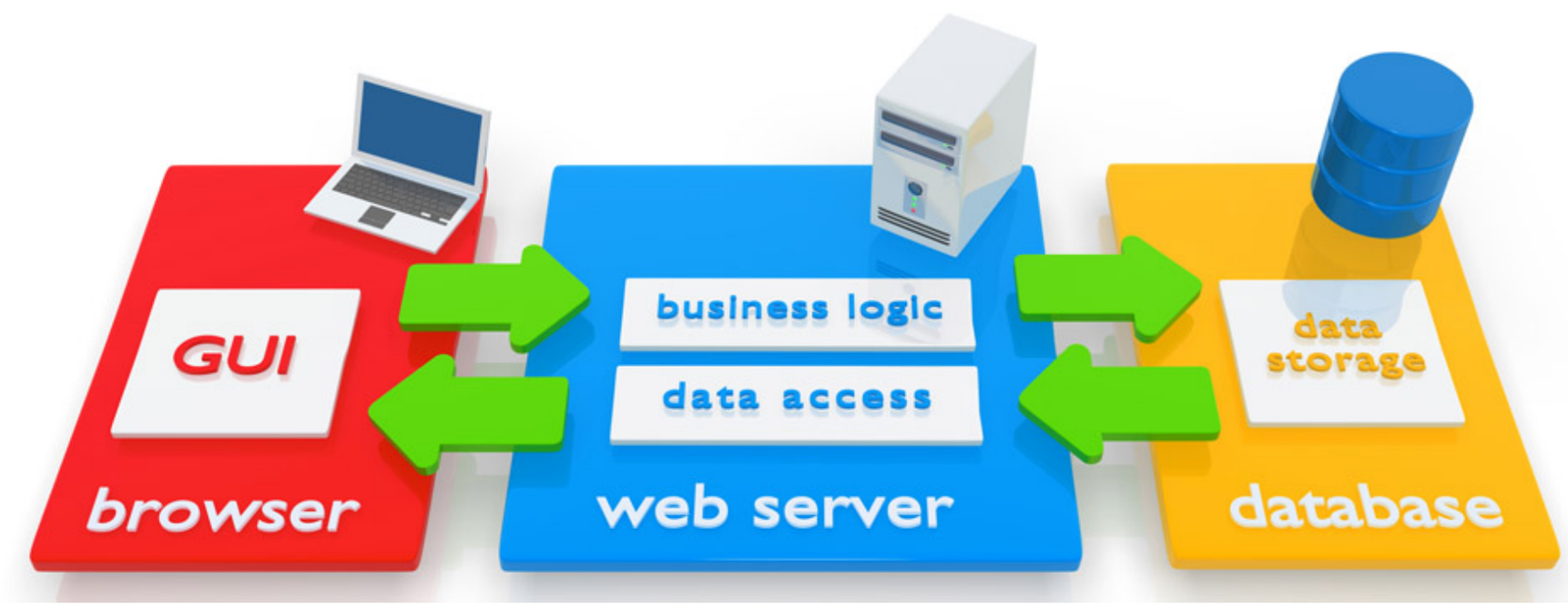
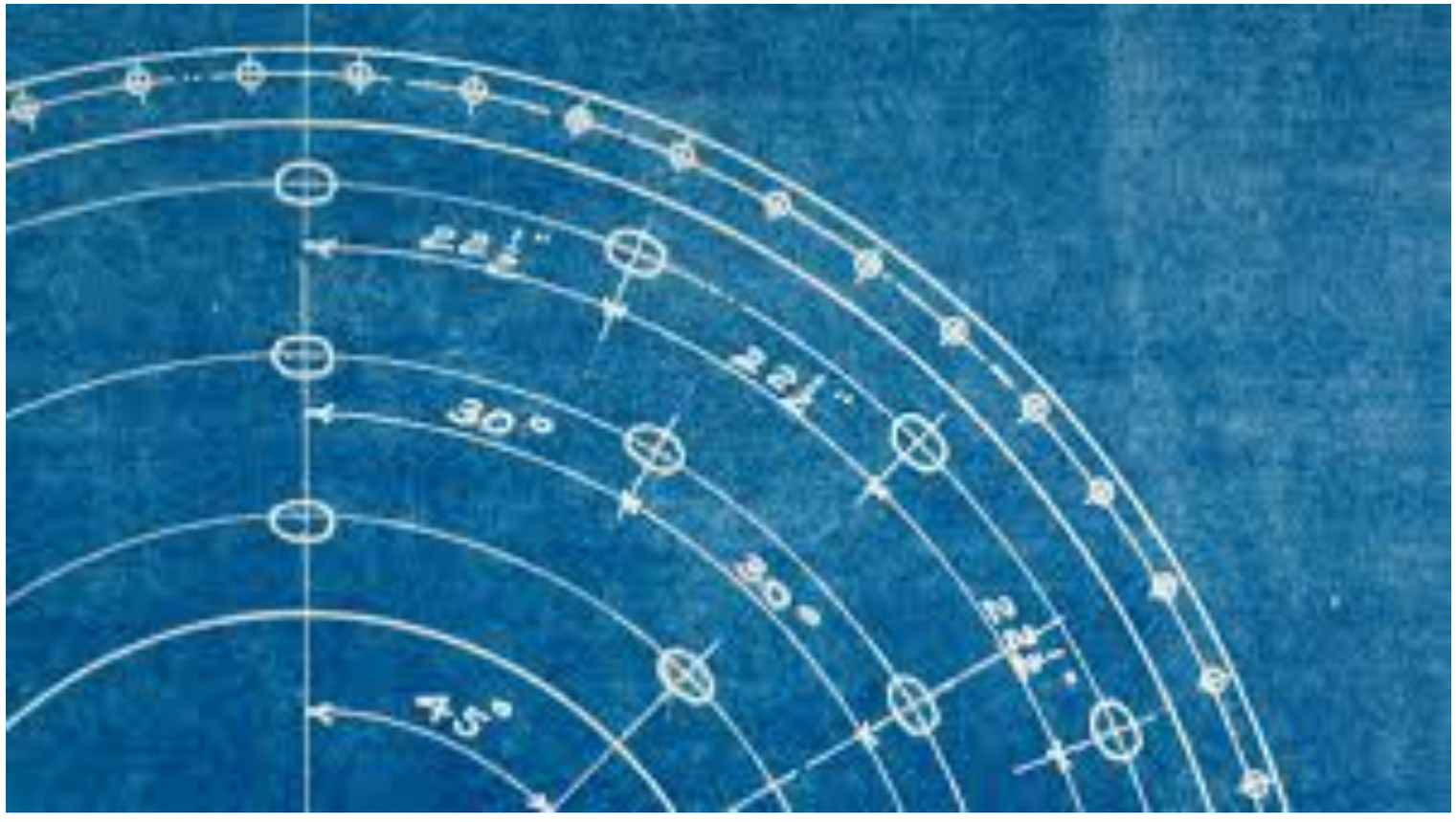
Course Mission

Transfer a set of foundation skills to enable you to design, build, secure, test and deploy a modern web application + API.



Agenda

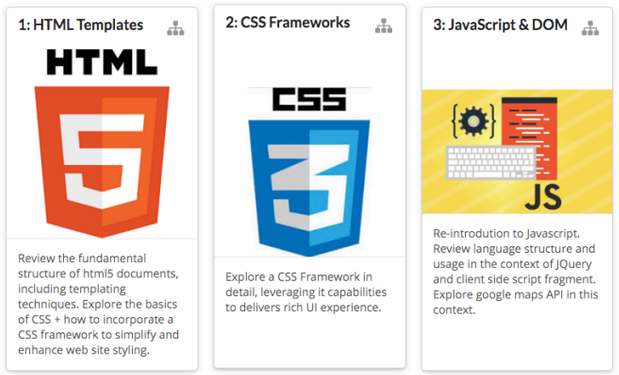
- Prerequisites
- Preparing for the course
- Brief Overview
- Lab Requirements
- Assessment Guidelines
- Schedule



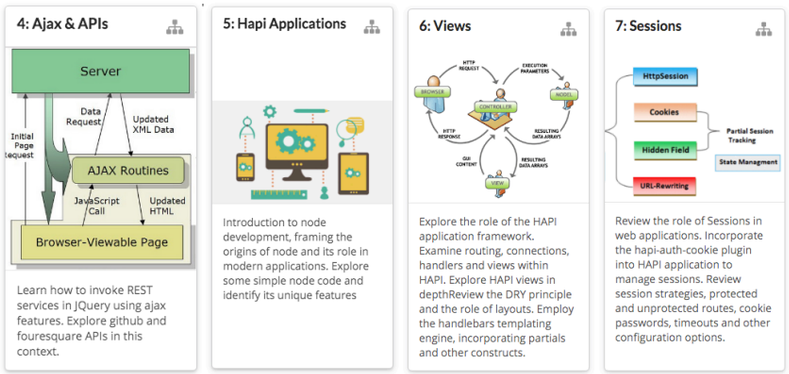
Perquisites

- Foundation level skills in:
  - HTML: Ability to effectively structure the html content of a small to medium static site, including the use of templates
  - CSS: Understand the fundamentals of CSS, and be able to realise simple layouts and designs
  - Javascript: Be familiar with the building blocks of the language and be able to compose realise algorithms to accomplish simple tasks.

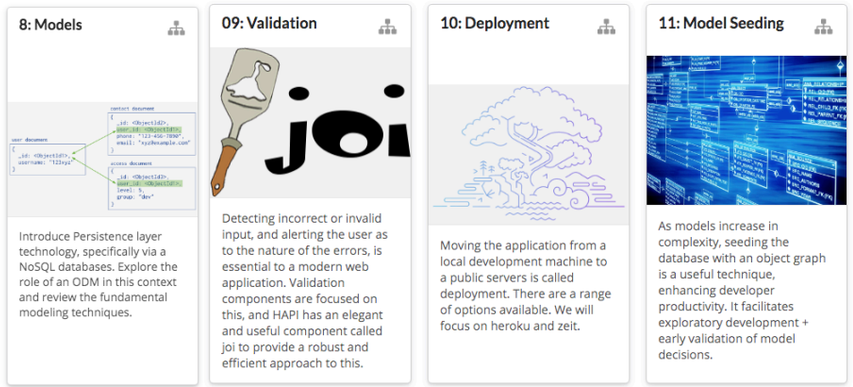
5 Topics Top Level Topics



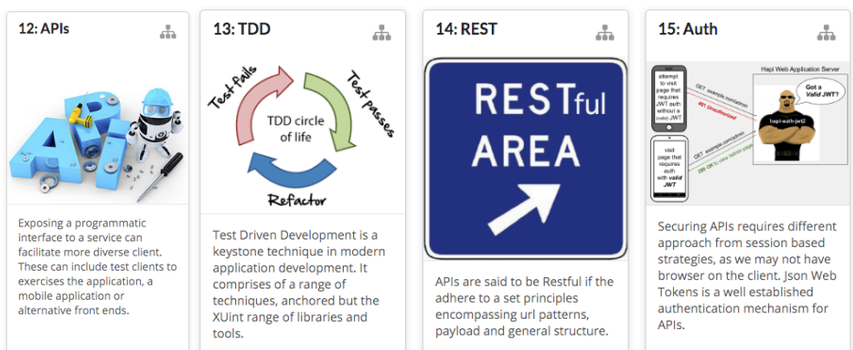
(1) Front End Foundation



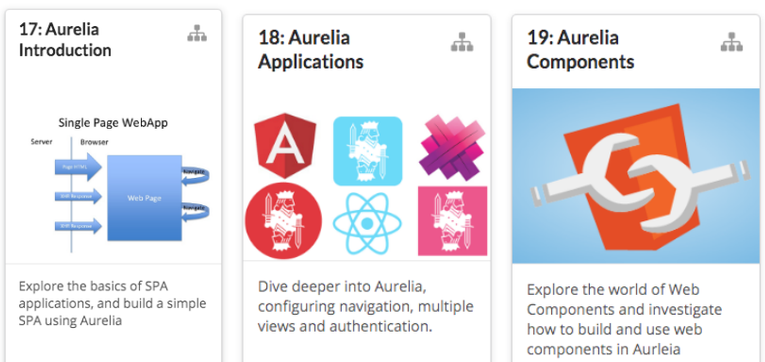
(2) Apis, Node & Hapi Applications



(3) Models, Persistence & Deployment



(4) Test Driven API Development



(5) Single Page Applications (optional)

(1) Front End Foundation

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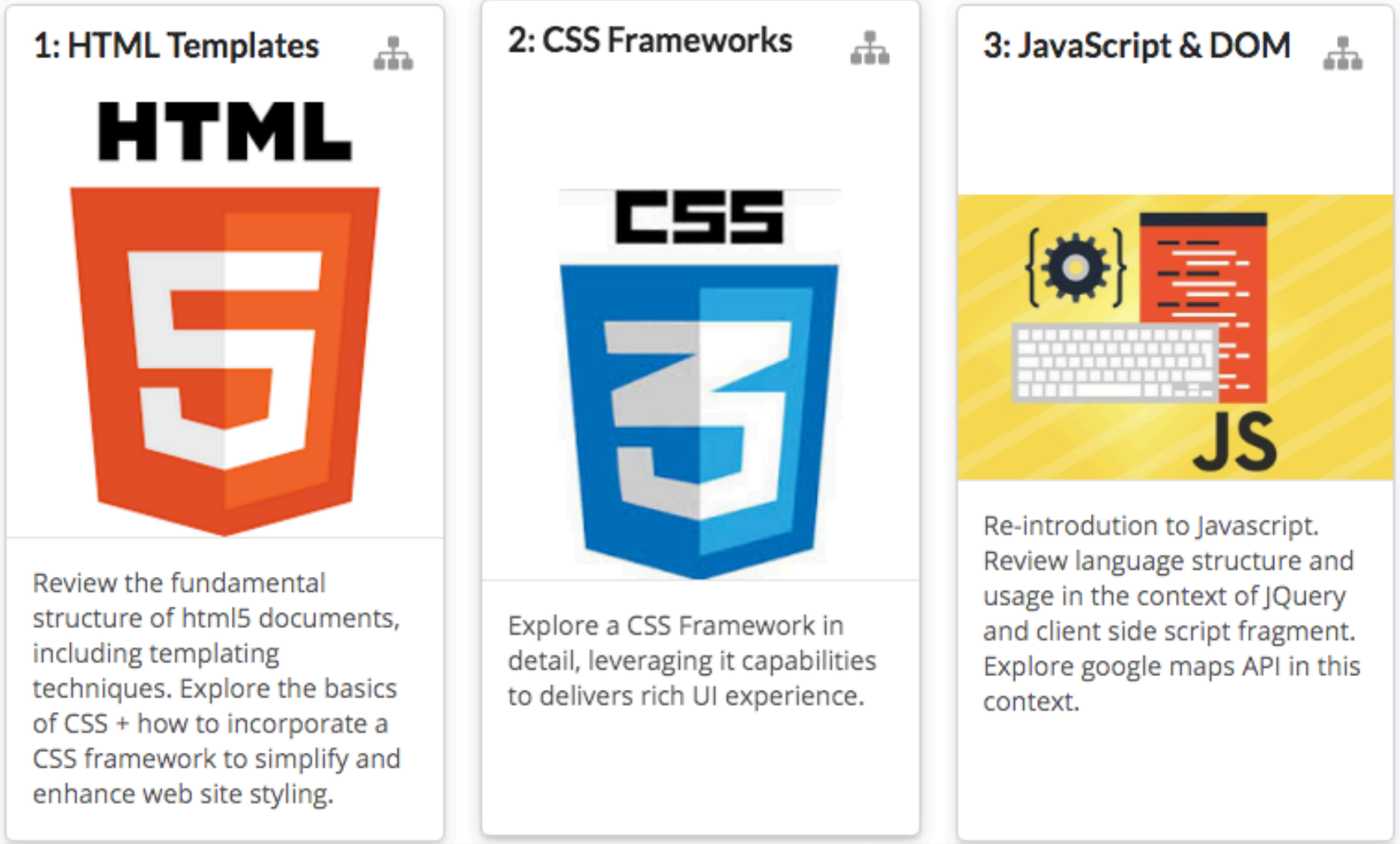
- Be able to structure and style a simple web site using html5, templating + a CSS framework.
- Understand the fundamentals of Javascript & JQuery



- Material Already Published
- Covers the prerequisites
- Students should review/ complete this material prior to formal commencement of programme

Concepts

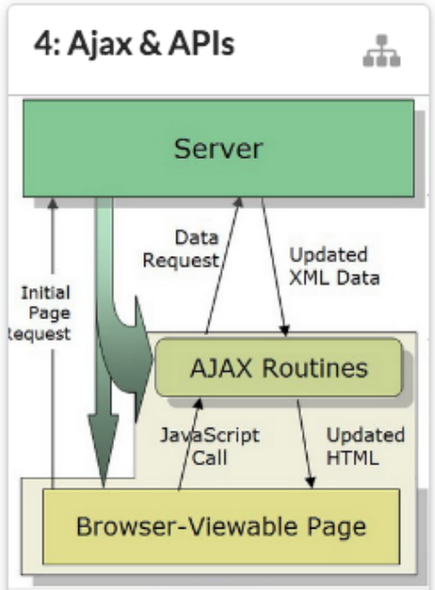
- Review Html + Css, focusing on templates + css frameworks
- Crash course in Javascript Fundamentals
- Learn basics of JQuery

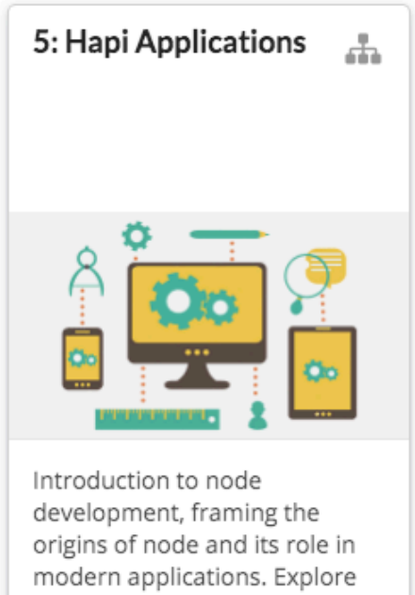
Tools:

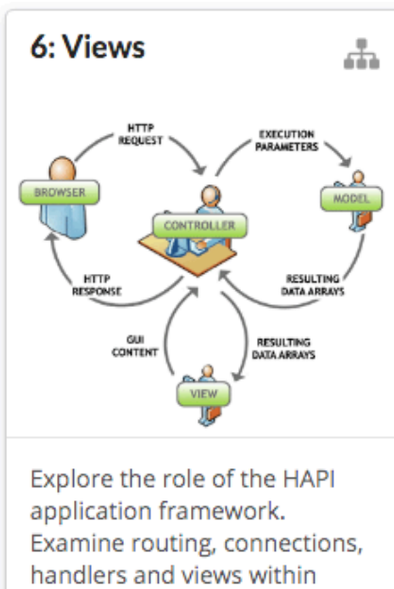
- Html5
- Semantic-ui
- jQuery
- Chrome dev tools
- DOM
- WebStorm IDE

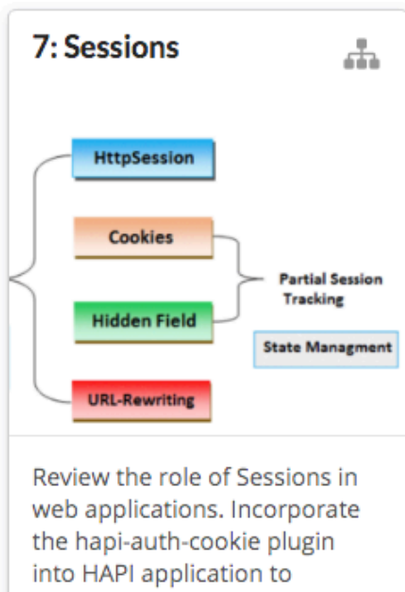
(2) Apis, Node & Hapi Applications

- Be able to build a simple Node application incorporating templates views
- Understand and use the fundamentals of session management in the application









Concepts

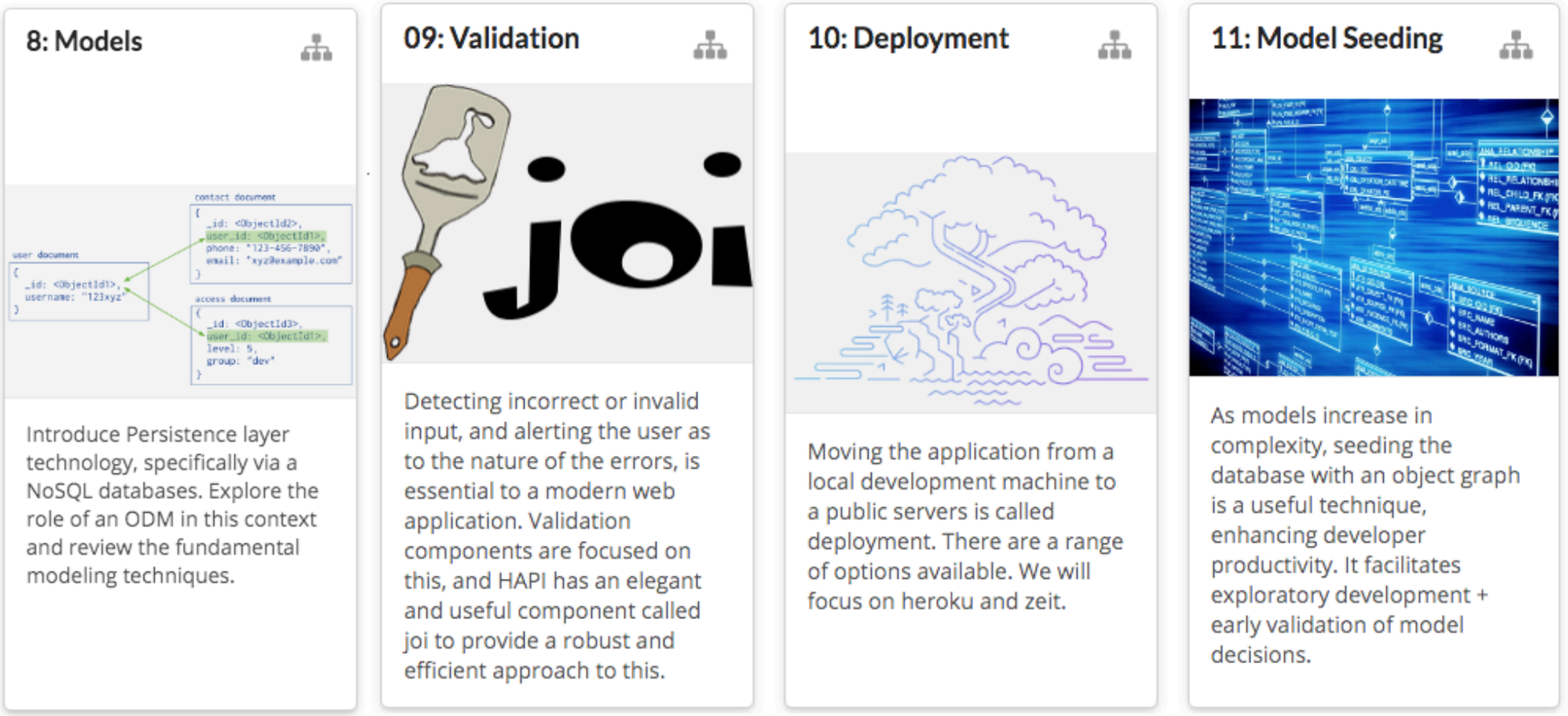
- Accessing APIs in Javascript
- Node.js Fundamentals
- Structure of a Hapi application
- Rendering views & templates
- Session Management

Tools:

- node & npm
- hapi.js
- inert, vision, handlebars, hapi-auth-cookie

(3) Models, Persistence & Deployment

- Introduce persistence mechanisms into an hapi application and be able to employ data validation, seeding.
- Be able to deploy a hapi application



Concepts

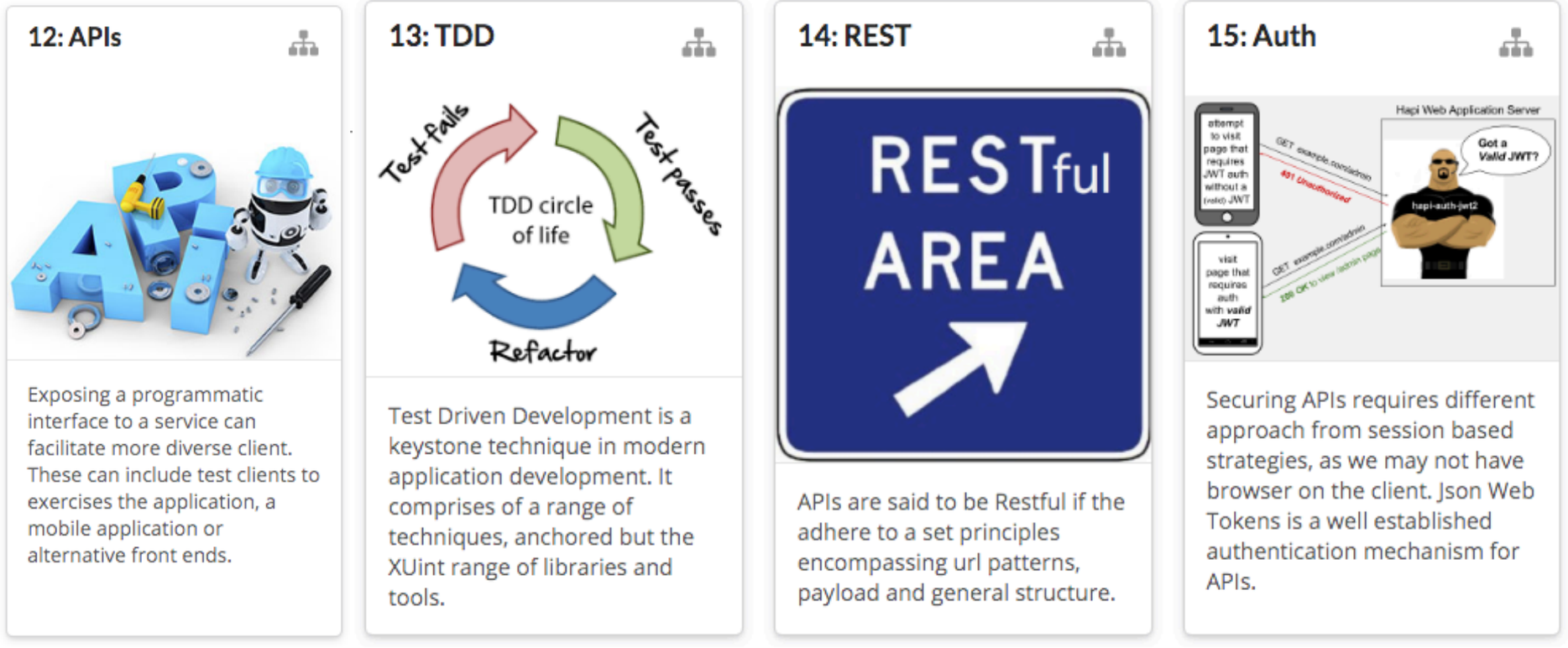
- Models & Schema
- Database access
- Validation of data
- Deployment

Tools

- MongoDB
- Heroku toolbelt
- Mongoose, mongoose-seeder, joi

(4) Test Driven API Development

- Be able to design, implement, test and secure a Restful API



Concepts

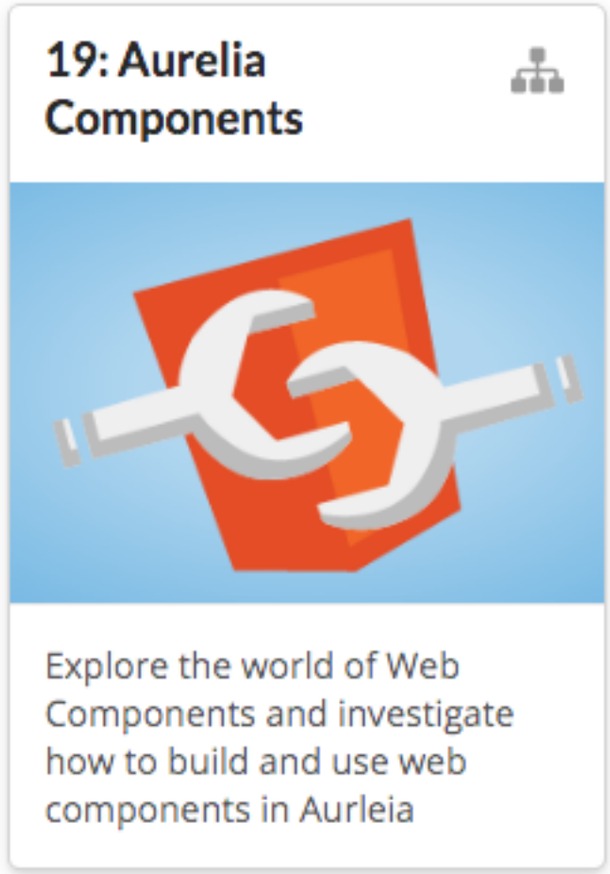
- Constructing a basic API
- TDD, Theory & Practice
- Fundamentals of REST
- Securing REST APIs

Tools:

- sync-request, mocha, chai, jsonwebtoken, hapi-auth-jwt2

(5) Single Page Applications (optional)

- Understand the SPA paradigm and be able to build a simple API driven SPA application



Concepts

- Single Page Applications
- Fundamentals of Aurelia.io
- Web Components
- Future of the web

Tools:

- aurelia.io
- gulp,
- aurelia-cli

before

(1) Front End Foundation

during

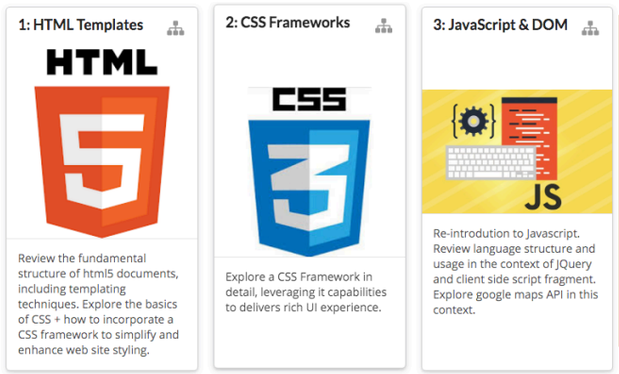
(2) Apis, Node & Hapi Applications

(3) Models, Persistence & Deployment

(4) Test Driven API Development

after

(5) Single Page Applications (optional)



Lab Requirements

- WebStorm 2016
- Node.js
- Mongo DB
- Heroku-cli
- + additional libraries & tools as needed in labs

Assessment Guidelines

- 2 Components:
  - Assignment: A Node Application - detailed specifications to be delivered in class
  - Research Note: A short paper (1500 words) on a specific research topic (short list to be provided)
- Deadline: End of Semester
- Marks
  - Assignment: 80%
  - Research Node: 20%

	Pre Tuition		
01 HTML 5 Templates & Deployment	02 CSS Frameworks Semantic UI	03 Javascript	
Lab-1.1 Lab-1.2 Lab-1.3	Lab-2.1 Lab-2.2	Lab-3.1 Lab-3.2	

On Site Tuition

	Friday:28h	Saturday: 29th	Sunday: 30th	Monday: 31st	Tuesday : 1st	Wednesday: 2nd	Thursday 3rd	Friday: 4th	Saturday 5th
08:15-09:45							10 Deployment		
10:00-11:30		06 Views							
11:45-13:15		07 Sessions							
13:30:15:00	03 Javascript Review	08 Models						12 APIs	
15:15-16:45	04 DOM/Ajax							13 TDD	
17:00-18:30	05 Node + HAPI							14 REST	
18:45-20:15						09 Validation	11 Model Seeding		

	Tuition		
	16 Aurelia Intro	17 Aurelia Apps	18 Aurelia Compnents
	Assignment	Assignment	Assignment

- Questions?