

DGM 1600 Competencies

To obtain transfer or experiential credit for the DGM 1600 Scripting for Internet Technologies, you must have demonstrated mastery of the competencies listed in this document. The competencies listed below are current as of June 2019 and represent the curriculum of DGM 1600 for the 2018-2020 academic years.

Because this course requires proficiency with Git, you must submit your proof of competency by providing links to the relevant portions of your code that can be publicly found on GitHub, GitLab, or similar remote git repositories.

You may submit as many URLs as you feel are necessary (even down to an individual commit) or you may squash many commits into one for proving your mastery of a set of competencies. You may wish to use the competency outlines below to create a document that has the competency in one column and the matching commit URL to the side of it. You can email your finished document to Dr. Thor Anderson thor.anderson@uvu.edu for evaluation.

The competencies have been grouped based on the 5 project assignments of the course. Each assignment builds upon the competencies acquired in the earlier assignment and leads to the Final Project. You will notice many of the competencies come directly from the [freecodecamp.org](https://www.freecodecamp.org) curriculum. This is by design since the [freecodecamp.org](https://www.freecodecamp.org) challenges support our classroom work.

Do not ask if other technologies or languages (PHP, WordPress, TypeScript, etc.) will meet the requirements for this class. They do not. This class very specifically focuses on scripting with modern JavaScript. There are other DGM and/or CS classes you may be interested in if you do not have experience or are not interested in JavaScript.

Project #1 - Technology Interest Page

- ▶ Create a web page utilizing modern HTML and CSS that is well laid out and styled.
- ▶ Use basic HTML and HTML5 to:
 - Headline with the h2 element
 - Inform with the Paragraph element
 - Uncomment HTML
 - Comment out HTML
 - Add images to your website
 - Link to external pages with Anchor elements
 - Create a bulleted unordered list
 - Create an ordered list
 - Nest many elements within a single div element
 - Declare the Doctype of an HTML document
 - Define the Head and Body of an HTML document
- ▶ Use basic CSS to:
 - Change the Color of Text
 - Use CSS Selectors to Style Elements
 - Use a CSS Class to Style an Element
 - Style Multiple Elements with a CSS Class
 - Change the Font Size of an Element
 - Set the Font Family of an Element
 - Size Your Images
 - Add Borders Around Your Elements
 - Give a Background Color to a div Element
 - Set the id of an Element
 - Use an id Attribute to Style an Element
 - Adjust the Padding of an Element
 - Adjust the Margin of an Element
 - Add Different Padding to Each Side of an Element
 - Add Different Margins to Each Side of an Element
 - Use Clockwise Notation to Specify the Padding of an Element
 - Use Clockwise Notation to Specify the Margin of an Element
 - Use Attribute Selectors to Style Elements
 - Understand Absolute versus Relative Units
 - Style the HTML Body Element
 - Use Hex Code for Specific Colors
- ▶ Use Applied Visual Design to:
 - Create Visual Balance Using the text-align Property
 - Adjust the Width of an Element Using the width Property
 - Adjust the Height of an Element Using the height Property
 - Adjust the background-color Property of Text
 - Adjust the Size of a Header Versus a Paragraph Tag
 - Add a box-shadow to a Card-like Element
 - Decrease the Opacity of an Element
 - Set the font-size for Multiple Heading Elements
 - Set the font-weight for Multiple Heading Elements

- Set the font-size of Paragraph Text
- Center an Element Horizontally Using the margin Property
- ▶ Use CSS Flexbox to:
 - Use display: flex to Position Two Boxes
 - Use the flex-direction Property to Make a Row
 - Use the flex-direction Property to Make a Column
 - Align Elements Using the justify-content Property
 - Align Elements Using the align-items Property
 - Use the flex-wrap Property to Wrap a Row or Column
 - Use the flex-shrink Property to Shrink Items
 - Use the flex-grow Property to Expand Items
 - Use the flex-basis Property to Set the Initial Size of an Item
 - Use the flex Shorthand Property
 - Use the order Property to Rearrange Items
 - Use the align-self Property

Project #2 – Personal Portfolio Page

- ▶ Create web pages that are pushed to GitHub and deployed using Netlify.
 - Create a web page that passes unit tests.
 - Create a web page utilizing modern HTML and CSS that is well laid out and styled.
 - Manage changes made to files and directories in a web development project using Git.
 - Initialize a local git repository
 - Configure git with proper user information
 - Add files to git version control
 - Stage files to be committed
 - Commit files to a git repository
 - Turn an existing project into a git repository
 - Initialize a remote git repository
 - Push local files to a remote repository

Project #3 – Personal Portfolio Upgrade

- ▶ Use introductory JavaScript to import and manipulate JavaScript arrays and objects gathered from an API and creatively display them on web pages.
- ▶ Create web pages that are pushed to GitHub and deployed using Netlify.
- ▶ Enhance a web page using introductory JavaScript.
 - Comment Your JavaScript Code
 - Declare JavaScript Variables
 - Storing Values with the Assignment Operator
 - Initializing Variables with the Assignment Operator
 - Understanding Uninitialized Variables
 - Understanding Case Sensitivity in Variables
 - Add Two Numbers with JavaScript
 - Subtract One Number from Another with JavaScript
 - Multiply Two Numbers with JavaScript
 - Divide One Number by Another with JavaScript
 - Increment a Number with JavaScript
 - Decrement a Number with JavaScript

- Finding a Remainder in JavaScript
- Compound Assignment with Augmented Addition
- Compound Assignment with Augmented Subtraction
- Compound Assignment with Augmented Multiplication
- Compound Assignment with Augmented Division
- Declare String Variables
- Escaping Literal Quotes in Strings
- Quoting Strings with Single Quotes
- Escape Sequences in Strings
- Concatenating Strings with Plus Operator
- Concatenating Strings with the Plus Equals Operator
- Constructing Strings with Variables
- Appending Variables to Strings
- Find the Length of a String
- Use Bracket Notation to Find the First Character in a String
- Understand String Immutability
- Use Bracket Notation to Find the Nth Character in a String
- Use Bracket Notation to Find the Last Character in a String
- Use Bracket Notation to Find the Nth-to-Last Character in a String
- Store Multiple Values in one Variable using JavaScript Arrays
- Nest one Array within Another Array
- Access Array Data with Indexes
- Modify Array Data with Indexes
- Access Multi-Dimensional Arrays with Indexes
- Manipulate Arrays With push()
- Manipulate Arrays With pop()
- Manipulate Arrays With shift()
- Manipulate Arrays With unshift()
- Write Reusable JavaScript with Functions
- Passing Values to Functions with Arguments
- Global Scope and Functions
- Local Scope and Functions
- Global vs. Local Scope in Functions
- Return a Value from a Function with Return
- Understanding Undefined Value returned from a Function
- Assignment with a Returned Value
- Understanding Boolean Values
- Use Conditional Logic with If Statements
- Comparison with the Equality Operator
- Comparison with the Strict Equality Operator
- Comparison with the Inequality Operator
- Comparison with the Strict Inequality Operator
- Comparison with the Greater Than Operator
- Comparison with the Greater Than or Equal to Operator
- Comparison with the Less Than Operator
- Comparison with the Less Than or Equal to Operator
- Comparisons with the Logical and Operator
- Comparisons with the Logical or Operator
- Introducing Else Statements

- Introducing Else If Statements
- Logical Order in If Else Statements
- Chaining If Else Statements
- Selecting from Many Options with Switch Statements
- Adding a Default Option in Switch Statements
- Multiple Identical Options in Switch Statements
- Replacing If Else Chains with Switch
- Returning Boolean Values from Functions
- Return Early Pattern for Functions
- Build JavaScript Objects
- Accessing Object Properties with Dot Notation
- Accessing Object Properties with Bracket Notation
- Accessing Object Properties with Variables
- Updating Object Properties
- Add New Properties to a JavaScript Object
- Delete Properties from a JavaScript Object
- Using Objects for Lookups
- Testing Objects for Properties
- Manipulating Complex Objects
- Accessing Nested Objects
- Accessing Nested Arrays
- Iterate with JavaScript While Loops
- Iterate with JavaScript For Loops
- Iterate Odd Numbers with a For Loop
- Count Backwards with a For Loop
- Iterate Through an Array with a For Loop
- Nesting for Loops
- Iterate with JavaScript Do...While Loops
- Generate Random Fractions with JavaScript
- Generate Random Whole Numbers with JavaScript
- Generate Random Whole Numbers within a Range
- Use the parseInt Function
- Use the Conditional (Ternary) Operator
- ▶ Manipulate the DOM using querySelector
- ▶ Use the ES6 import syntax

Project #4 – Baseball Cards

- ▶ Use JavaScript ES6 arrays and objects to produce a nicely formatted and interactive grid of "Baseball Cards" with a flip animation to show the front and back of the cards.
- ▶ Create web pages that are pushed to GitHub and deployed using Netlify.
- ▶ ES6
 - Explore Differences Between the var and let Keywords
 - Compare Scopes of the var and let Keywords
 - Declare a Read-Only Variable with the const Keyword
 - Mutate an Array Declared with const
 - Prevent Object Mutation
 - Use Arrow Functions to Write Concise Anonymous Functions

- Write Arrow Functions with Parameters
- Write Higher Order Arrow Functions
- Set Default Parameters for Your Functions
- Use the Rest Operator with Function Parameters
- Use the Spread Operator to Evaluate Arrays In-Place
- Use Destructuring Assignment to Assign Variables from Objects
- Use Destructuring Assignment to Assign Variables from Nested Objects
- Use Destructuring Assignment to Assign Variables from Arrays
- Use Destructuring Assignment with the Rest Operator to Reassign Array Elements
- Use Destructuring Assignment to Pass an Object as a Function's Parameters
- Create Strings using Template Literals
- Write Concise Object Literal Declarations Using Simple Fields
- Write Concise Declarative Functions with ES6
- ▶ Create new JavaScript objects using ES6 syntax
 - Use class Syntax to Define a Constructor Function
 - Use getters and setters to Control Access to an Object
- ▶ Use ES6 import syntax
 - Understand the Differences Between import and require
 - Use export to Reuse a Code Block
 - Use * to Import Everything from a File
 - Create an Export Fallback with export default
 - Import a Default Export
- ▶ Use ES6 filter array helper method
- ▶ Use ES6 map array helper method
- ▶ Use ES6 reduce array helper method
- ▶ Use ES6 find array helper method
- ▶ Add click handlers to DOM elements

Project #5 – Final Project

- ▶ Deploy visually pleasing, easy to navigate web site to public URL by simple Git push
- ▶ Create good UI that utilizes proper HTML, CSS and Flexbox
- ▶ Provide example of good JavaScript code including:
 - Document source code and describe features of the code
 - Use variables with proper scope
 - Utilize conditional logic and value comparison
 - Properly manipulate Strings
 - Create custom JavaScript objects
- ▶ Demonstrate use of ES6 including:
 - Use of let and const variables
 - Utilize arrow functions
 - Create strings using template literal syntax
 - Properly declare Objects
 - Use Import and Export syntax
- ▶ Demonstrate use of basic data structures including:
 - Use arrays to store and manipulate collections of data
 - Use of objects with key-value pairs
 - Iterate through arrays using loops and array methods

- Access object properties using dot and bracket notation
- Use object constructor methods properly
- ▶ Diagnose and correct runtime errors