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| **Digital Technologies** | **Digital Assets** | **T Course** | **Focus: Web Design** |
| **Unit Description**   1. The focus of this unit is on developing the students’ understanding of the building blocks of larger systems and developing the skills necessary to effectively design and develop digital assets for more complex data-driven systems. 2. Students will develop the skills and knowledge required to interpret and create their own digital assets for a range of purposes and audiences. 3. They analyse discrete components of existing processes and products, examining how they interact within a system and/or re-design and develop assets. | | | |
| **Specific Unit Goals**   1. Comprehensively apply a design process and develop the individual structures of data driven systems 2. Critically analyse, create, evaluate, and modify digital assets 3. Evaluate the nature and interactions of individual digital assets within the constraints of a larger system | | | |
| **Specific Unit Content**   1. **Design Process**    1. Critically analyse and apply a design process, evaluating opportunities and constraints, and explain the decision making when developing an asset    2. Critically analyse and apply the elements and principles of the creation of digital assets, for example, sections of code, web pages or 3D models    3. Apply the design process to evaluate and develop the architecture of the building blocks of basic systems, for example, pseudocode, wireframes, or flowcharts 2. **Strategies, methodologies and procedures**    1. Evaluate strategies, tools, and processes required to produce digital assets    2. Research and investigate a range of appropriate digital assets and justify design decisions    3. Analyse the selection and use of specific production tools which are appropriate for constructing digital assets    4. Create a digital asset. For example, sections of code, web pages or 3D models    5. Design assets using computational, algorithmic and/or data-driven thinking    6. Apply strategies to work both independently and collaboratively in time sensitive environments 3. **Theories, concepts and materials**    1. Critically analyse the theories affecting the design and development of a digital asset. For example the importance of style guides, the theory of negative space in web design, and the polygon count for 3D model development    2. Critically analyse and apply fundamental computer science concepts for problem solving in the development of digital assets    3. Critically analyse the factors affecting the development of a digital asset within the context of its design environment    4. Critically analyse legal, social and ethical responsibilities associated with the development of digital assets 4. **Contexts**    1. Critically analyse how design is influenced by context including social, historical and cultural, and how the design of a digital assets may impact systems, solutions and projects    2. Critically analyse the human considerations and challenges involved in the design and development of digital assets. For example the ethical, environmental and legal contexts, or the development of controversial technology 5. **Communication**    1. Communicate accurately with others in an appropriate format both orally and in writing    2. Communicate ideas and insights in a range of appropriate mediums and justify ideas coherently    3. Explain the process of solving design problems and justify the choices made during the development of digital assets    4. Justify ideas coherently using appropriate evidence and accurate referencing 6. **Reflection**    1. Reflect on own learning style and performance including planning, time management to develop strategies to improve own learning. | | | |
| **Assessment:**  3 – 5 assessment tasks are mandated by the BSSS. The tasks here are designed to give you a starting point from which to work into your own teaching and learning strategies. Make sure you consult the BSSS guidelines, course document on assessment types and weightings to ensure that they meet the requirements stated. | | | |

| **Week** | **Topic** | **Content Descriptors** | **Elaborations/Big Questions** | **Learning Activities and Assessment Tasks** | **Resources** |
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| 1 | Web History & Website Structure and Processes (i.e. how does the internet work) | 1a.  2a.  2b.  3a.  3d.  4a.  4b.  5a.  5c. | * What is the Web? * What is the Internet? * What assets are needed to develop a comprehensive web site? * What have been the changes in web design over time? * How have they affected the use and accessing of data on the web? * What Is the Design Process? * Steps involved in the design process. | * Look at <http://www.archive.org> or wayback machine, and compare sites from early 90’s to modern day. * Comparisons can be used to identify changes over time and technological improvements * Compare the changes in Hardware and Software over time * Make notes in the general design process/Design Cycle. Steps involved tasks that are performed. * Use of project management tools such as a Gantt chart(Trello)   **Suggested Assessment Task**   * Journal/Logbook: Ongoing notes, Page designs, algorithms, code snippets, ERD diagrams, database files, reflections on the work, sources of data, tutorials etc. | <https://web.stanford.edu/class/msande91si/www-spr04/readings/week1/InternetWhitepaper.htm> |
| 2 |
| 3 | Creating Web Page Assets Part 1 - HTML & CSS Development and learning about the W3C | 1a.  1b.  1c.  2a.  2b.  2c.  2d.  2f.  3a.  3b. (implicit)  3c.  3d.  4a.  4b.  5a.  5b.  5c.  5d.  6a. | * What is a Web Page? * How can we create a web page? * What are the assets required to build a web page/web site? * What is meant by accessibility? * What is the difference in a web page’s content and a web page’s presentation? * What are decisions need to be made when creating a web page Content demands vs presentation demands) | **Web Page Development#1 – Content and Presentation**   * Separation of content vs presentation vs interactivity * HTML Basics such as:   + Head vs Body   + Metadata   + Text representation like <p> and <h1>   + Tables   + Nav   + Lists   + Forms   + Video   + Images   + There’s lots * CSS Basics to style all of the above * Examine the school’s style guide for their web pages/document production. * W3C Standards and Accessibility guidelines for all of the above * Can make heavy use of [W3Schools](https://www.w3schools.com/html/default.asp) for tutorials for all of the above   **Suggested Assessment Task**   * Portfolio of web pages to show effective (not simple) use of the above assets to create a single web page. * The above could also be included in the student’s ongoing portfolio |  |
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| 9 | Creating Web Page Assets Part 2 – Adding Interactivity through programming | 1a.  1b.  1c.  2a.  2b.  2c.  2d.  2e.  2f.  3a.  3b. (implicit)  3c.  3d.  4a.  4b.  5a.  5b.  5c.  5d.  6a. | * How can a web page be “programmed”? * What is JavaScript? * How can JavaScript program be created and used in a web page? * What is the DOM model? * What are decisions need to be made when creating a web page Interactivity demands vs Content demands vs presentation demands) * What are the benefits and disadvantages of using JavaScript in a web page? | **Web Page Development#2 – Adding Interactivity**  Programming Theory (JavaScript)   * Data types   + Integer, Character, Float * Control Structures:   + If Statements   + For Loops   + While Loops * Data Structures   + Arrays * Lists * Checking of Data on a web page * Creating/editing HTML elements   + Creating a JavaScript Cookie to store user data * Use DOM Model to alter/update a web page. * Discuss the social issues of JavaScript, data collection and data retention. – Creation of Cookies and their use by the web host/designer etc.   **Suggested Assessment Task**   * Create a single or multi-page (2 - 3) web site that shows effective use of HTML, CSS and JavaScript assets | * W3Schools JS tutorials * SoloLearn Exercises |
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| 13 | Creating Web Page Assets Part 3 – Databases and Web Page Design | 1a.  1b.  1c.  2a.  2b.  2c.  2d.  2e.  2f.  3a.  3b. (implicit)  3c.  3d.  4a.  4b.  5a.  5b.  5c.  5d.  6a. | * How do we store data in an easily accessible way?   + Databases   + Spreadsheets * What is a database? * How are they used in web sites? * Where is the data stored? * What is RDBMS? * What are relationships in a RDB? * How do we obtain data from a database or RDB effectively? * How can we integrate the data into a Web page? | **Web Page Development#3 – Developing a Data Source**   * Create a mutli-sheet spreadsheet and compare top a RDB   Relational Database (RDB)   * RDB vs Spreadsheet * Role in Website Development * Data Validation * Design of RDB * SQL Overview   + Queries   + Database creation   + Data upate/editing   **Suggested Assessment Task**   * Create a RDB of 3 – 5 tables * Develop an ERD for this design * Enter data for between 30 – 40 records * Query using SQL | * MS Access * MySQL * GFC Online Free tutorials for MS ACCESS - <https://edu.gcfglobal.org/en/access2016/> |
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| 18 | Catch Up Weeks/ Final Assessments | |  | * **Suggested Assessment Task**   + End of unit Theory Test, Set of Prac. Exercises |  |
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