Software Requirements Specification

for

UPOD - Web Design

**Version 0.4**

**Prepared by Tom West**

**Wilfrid Laurier University, CP317**

**15/06/2016**

**Table of Contents**

[1. Introduction 4](#_Toc453890321)

[1.1 Product Scope 4](#_Toc453890322)

[1.2 Definitions, Acronyms, and Abbreviations 4](#_Toc453890323)

[1.3 References 4](#_Toc453890324)

[1.4 Overview 4](#_Toc453890325)

[2. Overall Description 5](#_Toc453890326)

[2.1 Product Perspective 5](#_Toc453890327)

[2.1.1 System Interfaces 5](#_Toc453890328)

[2.1.2 User Interfaces 5](#_Toc453890329)

[2.1.3 Software Interfaces 5](#_Toc453890330)

[2.1.4 Communication Interfaces 5](#_Toc453890331)

[2.1.5 Memory Constraints 5](#_Toc453890332)

[2.2 Constraints 6](#_Toc453890333)

[3. Specific Requirements 6](#_Toc453890334)

[3.1 External Interfaces 6](#_Toc453890335)

[3.2 Product Functions 6](#_Toc453890336)

[3.3 Performance Requirements 6](#_Toc453890337)

[3.4 Logical Database Requirements 6](#_Toc453890338)

[3.5 Software System Attributes 6](#_Toc453890339)

[3.5.1 Reliability 6](#_Toc453890340)

[3.5.2 Availability 7](#_Toc453890341)

[3.5.3 Security 7](#_Toc453890342)

[3.5.4 Maintainability 7](#_Toc453890343)

[3.5.5 Portability 7](#_Toc453890344)

[3.6 Organizing Specific Requirements 7](#_Toc453890345)

[3.6.1 System Mode 7](#_Toc453890346)

[3.6.2 User Classes 7](#_Toc453890347)

[3.6.3 Objects 8](#_Toc453890348)

[3.6.4 Features 8](#_Toc453890349)

[3.6.4.1 Landing Page 8](#_Toc453890350)

[3.6.4.2 Portal Page 8](#_Toc453890351)

[3.6.4.3 Single Entry Page 8](#_Toc453890352)

[3.6.4.4 About UPOD Page 8](#_Toc453890353)

[3.6.4.5 Admin Login Page 9](#_Toc453890354)

[3.6.4.6 Search Results Page 9](#_Toc453890355)

[3.6.5 Functional Hierarchy 9](#_Toc453890358)

[4. Supporting Information 10](#_Toc453890359)

**Revision History**

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Date** | **Reason for Changes** | **Version** |
| Omid Ghiyasian | 25/06/16 | SQA and Analysis Feedback |  |
| Muttahir Zia | 22/06/16 | SQA Feedback |  |
| Omid Ghiyasian | 19/06/16 | SQA Feedback |  |
| Tom West | 15/06/16 | Make Edits based on SQA Feedback | v0.4 |
| Omid Ghiyasian | 13/06/16 | SQA Feedback |  |
| Tom West | 25/05/16 | Filling out Section 2 & Minor Edits to High Level Requirements. | v0.3 |
| Tom West | 17/05/16 | Functional Requirements Draft Complete. Adding High Level Requirements Draft. | v0.2 |
| Tom West | 13/05/16 | Initial Draft | v0.1 |

# Introduction

## Product Scope

UPOD’s Web Design promotes positive user experience, given that current physics resources (i.e. HyperPhysics) feature poor user friendly designs. As such, the front end of UPOD will emphasize ease of navigation. Further description for UPODS front-end overview outlined below.

## Definitions, Acronyms, and Abbreviations

* Administrator: an individual with unrestricted access to the UPOD site
* Moderator: an individual with permission to add/delete/edit content of the UPOD site
* User: an individual who can only view content of the site
* UPOD: Undergraduate Physics Online Database
* Web Design/Front End: pages, features, and functions that users will interact with and make use of while navigating the UPOD site.

## References

IEEE Recommended Practice for Software Requirements Specifications (IEEE Std. 830-1998) WLU CP317 Class of Spring 2013: Pong Tracker Requirements used as example

## Overview

The Web Design requirements document outlines the following:

* Interfaces and Constraints of the UPOD Front End
* Functions of the UPOD Front End
* Front End Performance Requirements
* Features of the UPOD Front End

# Overall Description

## Product Perspective

Web Design relates to the front end of the UPOD system – the components that users will interact with on the website. Since the front end is only a part of the entire system, other features supported by the site are outlined in different requirement documents. Interfacing between the various sections of the project under section 2.1.3 of this requirement document. More detail will be added during the analysis phase and as the project develops.

## System Interfaces

UPOD content operates on modern and standard browsers.

* Google Chrome
* Mozilla Firefox
* Internet Explorer (as well as Microsoft Edge)
* Safari

## User Interfaces

Users are expected to interact with UPOD with a mouse and keyboard, and priority will be given to ensuring proper interaction via this method. Interaction with UPOD by touchscreen may be considered if time allows.

## Software Interfaces

The front end will contain information contained in a database. Animations and graphics displaying physics content is to be implemented using animation software.

## Communication Interfaces

UPOD will remain responsive across internet service providers. More detail to be added later with respect to Laurier network restrictions and accessible ports.

## Memory Constraints

No memory constraints identified at this point for the front end. Expected memory constraints for back end and graphics/animation content located in their respective requirement documents.

## Constraints

UPOD Web Design has a hard deadline by the end of the 2016 Spring Term (July 26, 2016). The UPOD budget is $0, so any software/frameworks must be free to use.

## Specific Requirements

## External Interfaces

None identified at this point.

## Product Functions

* UPOD must be searchable by text and support navigation through site content, such as by physic discipline/specialized area of study.
* UPOD’s web interface will contain interactive graphics and animations that users can use to improve their understanding of concepts.
* UPOD will allow for moderators and site administrators to add, delete, and modify pages and categories when required.
  + A built in login process for site admins and moderators to be utilized on UPOD, preventing unauthorized modifications and edits.
* UPOD will allow site administrators to create, delete and access moderator accounts through a list.

## Performance Requirements

Searches should be satisfied within a reasonable time of searching. More detail will be added at a later date. Details concerning performance of the site under heavy user load will be added as well.

## Logical Database Requirements

All physics content and graphics will be stored in a relational database. More information pertaining to database structure can be found in the Back End requirement document.

## Software System Attributes

## Reliability

UPOD expected to be available as a permanent reference tool, with maintenance conducted in a development environment and copied to production environment live.

## Availability

Software used in UPOD’s front end must be supported across the previously listed browsers, and commonly available for users to set up if required.

## Security

All physics content on UPOD is free for all to use, and therefore there are no major security constraints. Administrator login information must remain inaccessible, and reasonable care exercised in order to prevent attacks on the Hopper server.

## Maintainability

Code should follow standard protocols and be well documented for future maintainability. UPOD is assumed to be available for the foreseeable future, therefore the set of individuals in charge of maintenance will not be constant.

## Portability

Development will take place on a Unix based server, so no portability concerns are currently identified. Any reasonable requirements for software to be installed on Hopper will be communicated to David Brown as soon as they are identified and validated.

## Organizing Specific Requirements

## System Modes

UPOD’s functionality will be the same for all users, however, there will be an additional administrator mode where content can be added, removed, or edited.

## User Classes

* Administrator:
  + Create/Delete Account
  + Access Admin/Moderator List
  + Login/Logout
  + Update Account
  + Add/Delete/Modify Pages and Categories
* Moderator
  + Login/Logout
  + Update Account
  + Add/Delete/Modify Pages and Categories
* User
  + Search for Pages/Categories
  + View Pages/Categories
  + Interact with Graphics/Animations

## Objects

To be completed in the analysis phase.

## Features

## Landing Page

The UPOD landing page is the first thing students will see when accessing UPOD. The UPOD design philosophy will encourage users to search the site quickly - the focus on and size of the search bar on the landing page will promote a quick search to whatever term the student is looking for. i.e. similar to the Google Search page.

## Portal Page

The portal page will act as a template for the splash page of each physics discipline. Each discipline shown on its own Portal Page, which will display a summary of the physics discipline as well as contain a list of all Single Entry Pages that fall under that discipline.

## Single Entry Page

The single entry page will act as a template for creation of the majority of UPOD’s content. Each concept or law shown on its own Single Entry page, which will display background info, important formulas, and link users to relevant information. Relevant links displayed at the bottom of the page, similar to the “See Also” section of Wikipedia pages.

## About UPOD Page

This page will outline the purpose of UPOD: making accurate and easy to understand physics content accessible to undergraduate students. It will also contain a section to give credit to those who contributed to the creation of the site.

This is also where users will be able to contact UPOD administration by email to report missing, incorrect, or broken content.

## Admin Login Page

Site admins will need to enter credentials on this page to gain administrator access to the site’s edit mode – URL for this page given only to admins/moderators (i.e. no direct link to Admin portal.)

## Search Results Page

Topic searches should contain enough relevant information to satisfy the user’s search. Since some information can apply to many different disciplines, (i.e. Speed of Light would be in both Classical Mechanics as well as Optics) a search for terms should list all Single Entry Pages that refer to that term. Results should be displayed with a Page Heading as well as a brief preview of the info contained on the linked page. (i.e. similar to a general Google Search)

## Functional Hierarchy

To be completed in the analysis phase.

## Supporting Information

Requirements Documents for other aspects of UPOD can be found in the GitHub repository. The other aspects are:

* Back End/Database
* Graphics/Animations
* Physics Content