

## ABSTRACT

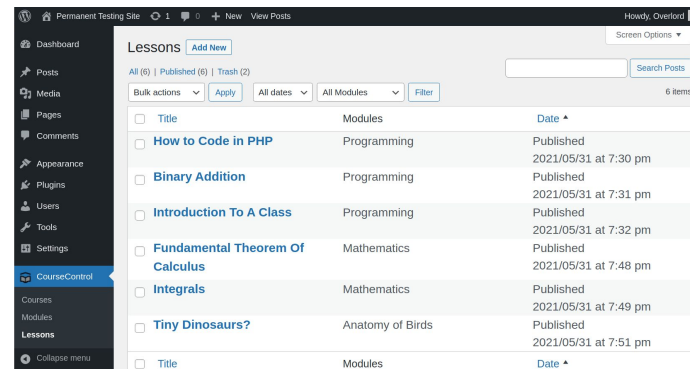
This project created CourseControl [1], a Web Course Management WordPress plugin to enable specific functionality to support web courses on WordPress websites. This project plugin enables creation of web courses, which are able to include modules, and the modules in turn include lessons. Development used PHP, and was initially done on Windows, but unit testing was performed on a LAMP stack with Linux on Raspberry Pi. The source code for this project is released as open-source for anyone to utilize or improve.

## INTRODUCTION

The goal of this project was to build a Web Course Management WordPress plugin that would add specific Web Course Management functionalities to a WordPress website. WordPress is a free and open-source content management system for creating websites. Written in PHP, it pairs with a database such as MySQL. WordPress accounts for approximately 40% of the top 10 million websites as of March 2021 [2]. WordPress includes a plugin architecture, which enables detailed modifications to WordPress and addition of almost any conceivable feature by adding your own PHP code calling certain activation 'hooks' in the WordPress API [3]. The audience is intended to include hobbyists, teachers, and subject experts who may wish to share their knowledge through an online web course on their own WordPress powered website.

## DESIGN AND ANALYSIS

This project utilizes PHP to enabled creation of web courses for WordPress sites, with a hierarchy like a directed acyclic graph rather than a simple tree structure. It supports Lessons connected to Modules, connected to Courses. Each lesson is a single WordPress custom-type post. Reuse of content is supported for efficiency, so that a lesson can be part of multiple modules, and a module can be part of multiple courses. To ensure ease of use, these different object types are all added under a single menu item on the WordPress Admin Dashboard.



The method used for linking these objects simulates dual pointers, with metadata tags added to both Lessons and respective Modules, and with Modules to Courses, that indicate these links. This method is simpler than alternatives, but requires careful cleanup following addition or deletion of data items. The ability to sort by attached Modules or Courses is also implemented, allowing users to view only Lessons or Modules linked to a specific Module or Course. A new testing environment was set up using a Raspberry Pi, and unit tests were written to ensure the proper addition and deletion of data items and their metadata links.

## CONCLUSION

This CourseControl WordPress plugin adds new functionalities to the site, including a new menu on the admin dashboard, new data items, and ways to order and sort those data items. The design chosen was able to provide the functionality needed, and testing was able to ensure proper cleanup and maintenance of metadata and data items. Further additions to the plugin could include quizzes, monetization options, and enrollment.

## SUMMARY

Written in PHP, this project has involved creation of a free and open-source WordPress plugin that enables adding specific functionality for Web Course Management to a WordPress website. CourseControl is optimal for hobbyists, teachers, and subject experts testing the idea for a webcourse on their own WordPress website. Utilizing a directed acyclic graph hierarchy, courses may include modules, which themselves include lessons.

## REFERENCES

1. <https://github.com/IsNOTJeremy/CourseControl>
2. [https://w3techs.com/technologies/overview/content\\_management](https://w3techs.com/technologies/overview/content_management)
3. <https://www.wpbeginner.com/glossary/plugin/>