



University
of Regina



FACULTY OF ENGINEERING
& APPLIED SCIENCE

**Project report-out & lessons learned
by Squirmly Gummy Worms**

ENSE 271

**University of Regina
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Project Team

Team Name and Members

Team Name: Squirmly Gummy Worms

Team Members:

1. Archisha Bhattacharya (Software Systems Engineering Student)
2. Cameron Wilson (Software Systems Engineering Student)
3. Gregory Sveinbjornson (Software Systems Engineering Student)

Project Sponsor

- Dr. Tim Maciag (ENSE 271 Lecturer)



Business need/opportunity

The Engineering program at the University of Regina is an accredited program governed by Engineers Canada. For an engineering program to be accredited, the program should meet all the Program Requirements outlined by Engineers Canada. In addition, the graduating engineers should also meet all the recommended Graduate Attributes to prove demonstrated competency. Hence, the assessment board of the University of Regina formed the IDA map to assess the levels of outcomes in each program of the Engineering and Applied Science faculty. The IDA Map enables the administrators to evaluate their programs and make required course outlines changes continually. However, maintaining and updating the IDA maps is becoming a hassle for the administrators as they are not getting the required data on time from the course instructors. Many course instructors are also unaware of the IDA map and the expected outcomes from their courses. Moreover, the IDA map is currently in an Excel format, which is hard to read and maintain. It is also not easily accessible to most faculty members.

This project aims to build an efficient navigation system for collecting data from the professors to populate and maintain the IDA map. The project strives to fulfill the following objectives:

1. Efficient and timely collection of data
2. Tracking collected data
3. Organizing the IDA Map to display it in a more straightforward format

The above objectives ensure that the appropriate graduate attributes are being tracked and achieved in each program of the engineering faculty.

Reflections on project planning

The NorthStar customer chosen by the Squirmly Gummy Worms was the professor who collected data for accreditation. Our carry over customer was chosen to be the administration, specifically Gina as she was the one looking at what data is collected, who sent it in and when. We assumed that the project would be done on WordPress and that we would be constrained by both the platform and how long we would have to actually implement the solution. Having to learn all the content then apply it directly led to some challenges, however we knew that our lack of experience and knowledge would also be a constraint. Another large and uncovered constraint was WordPress itself; we had no budget therefore we could not pay for our own hosting service and attempting to use Local to do it on already owned hardware led to increased issues as well. While working, we also discovered that many plugins have a “freemium” mind set, and a lot of the features we wanted to use cost money, and a budget of zero dollars made that a non-option to use. Plugins in general are also a large, uncovered constraint, most plugins are made for things other than the database of collected data on a web host solution we were trying to build. Many were for blogs, or store front pages so collecting data than displaying it on the same service was not an easy task and required messing with some plugins to find one that we could make work. Not being able to create a plugin due to lack of knowledge and experience meant we were at the mercy of others ability, and the additional time constraint meant that learning to make plugins that would work would have taken too long.

When doing our affinity diagramming and empathy mapping, we uncovered many key things that we could focus on in building our solution. During our affinity diagramming process, we discovered that certain things needed to exist or be improved upon in the current system. A notification system that was not Gina emailing individual professors was one of the larger things we wanted to get into our solution as it would make the life of both our NorthStar and carryover customers’ orders of magnitude easier. The other major issue that was uncovered was lack of knowledge when professors first begin and/or are out of practice collecting and submitting data. Adding an area to learn the ins and outs of this was thus also determined to be a part of the solution. During the empathy Mapping process, we discovered that one of the larger issues facing this process was professors either not collecting data, finding it confusing or just submitting something that was incorrect. This led some people to have a low confidence in their fourth-year students being able to function as a fresh university graduate should. The other large portion of the project was that the old Microsoft Excel format was not something they wanted to use, they wanted it replaced with a more sophisticated method but did not know what that method would be. Both the IDA map and OBA form thus needed to improve, be specific to the program and be able to allow for an always improving faculty.

During prototyping we found that not thinking of how to do it just get an idea down helped provide better ideas for solutions. We found that certain ideas we had at this stage were not liked by the customer but since it was done on paper it was not a large effort to put it together, allowing for quick changes to be made. We used signifiers such as arrows to denote a drop down and labels on buttons to show what clicking the button would do. We also ensured to group things together, such as all the submission tools were in one area, viewing and



working in another and learning also had its own section. We also used Forcing functions to ensure that incomplete data is not submitted, the bare minimum is set to mandatory so the instructor must submit something in order to send the form in. This also prevents them from sending it in early in error when the form is not actually completed. Finally on the home page we used progress bars as a metaphor to give a visual representation of the progress each group is making in relation to their total and others.



Reflections on project results

This project started in the second week of this class and lasted until the final week. Overall, we liked the project, as it reflected what a real industry project would be like, and it tried to solve a real problem that the university has with accreditation. The only downside for us was the limited amount of time we had to complete the project, but with the class only lasting 6 weeks that was an unavoidable problem.

The main things that went well for us were the original brainstorming and our high-fidelity prototype. When we first met, we did not have a lot of direction on where we should take the project. We came up with a different NorthStar customer than all the other groups as we focused more on a professor experience rather than an administrator experience, and I think this helped us in the end as we had a different vision than all the other groups and that gave us different avenues to explore. Another thing that went well for us was our Hi-Fidelity prototype. We took inspiration from U of R webpages but still wanted to keep the design our own, and in the end, we came up with a design that Dave and Gina both really liked. This made it easier for us to translate everything into WordPress as there were no major changes to be made.

One thing that did not go well for us was our original presentation. We were unsure what to present so we presented everything, including a lot of unnecessary information that Dave and Gina did not understand. We used the feedback we got to improve in our next three presentations.

We were successful in getting almost everything we had from our Hi-Fidelity prototype. The only major thing we did not implement was a search function, as we found it was clunky and we hadn't gotten any indication from Dave and Gina that it was desired. We made some minor tweaks to colours and shapes, but they are very similar.

Website:

Welcome to the University of Regina accreditation website for the faculty of Engineering and Applied Science

View OBA Forms



Prototypes:

The screenshot shows a web page with a yellow header bar containing the University of Regina logo and navigation links for 'Submit Data', 'Resources▼', and 'Login'. Below the header is a large aerial photograph of the university campus. A dark overlay box contains the text: 'Welcome to the University of Regina accreditation website for the faculty of Engineering and Applied Science.' To the left of the main content area are three buttons: 'View OBA forms' (with a document icon), 'View IDA maps' (with a grid icon), and 'Search' (with a magnifying glass icon). At the bottom right of the page is a green callout box with the text: 'Find out about the accreditation process for the engineering field in Canada and how the University of Regina strives to follow it.'

People-Centred design ideas helped us design this site, as we tried to focus on our end-to-end experience rather than what features we thought would get us a good mark. We also made sure that our page followed the social constraint of people reading top-down and left to right. We wanted our site to look visually pleasing in that regard on every page.

We would do a lot of what we did on this project again on another project. We split up the work well and worked efficiently from beginning to end. We got good customer feedback that improved our project each time. At the end of our group meetings, we would always plan out what we needed to have done before our next meeting. Overall, the project went quite well for us, and we would not change too much.

The one thing we would have done differently is have our own site instead of the site made for us. Every time we needed Adam to instal a plug-in, even though he was very quick, it still interrupted our workflow and slowed us down. Another thing we would have done is experiment with different user personas to create different views for a professor and an administrator.

Overall, we are happy with the job we did on this project and are proud of the result. We can take a lot of what we learned about design in this project and use it into future projects.



WordPress Themes and Plugins

Theme

Astra by Brainstorm Force

Rating:

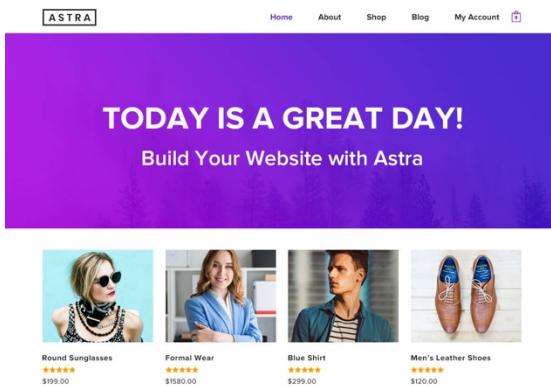
5 out of 5 stars

Number of Ratings: 4,941

Version: 3.4.6

Last Updated: June 17, 2021

Active Installations: N/A



Astra is a WordPress theme that allows users to customize and create their WordPress sites. It provides options for building custom header and footer, customizes font style and size, set theme colours, etc. It also has many starter templates which is compatible with various page builders like Elementor, Beaver Builder etc.

Plugins

Starter Templates – Elementor, Gutenberg & Beaver Builder Templates by Brainstorm Force



Rating:

4.9 out of 5 stars

Number of Ratings: 1,630

Version: 2.6.12

Last Updated: 1 week ago, from June 17, 2021

Active Installations: 1+ million



Starter Template is a WordPress plugin that provides starter templates and page building blocks to build a WordPress site.

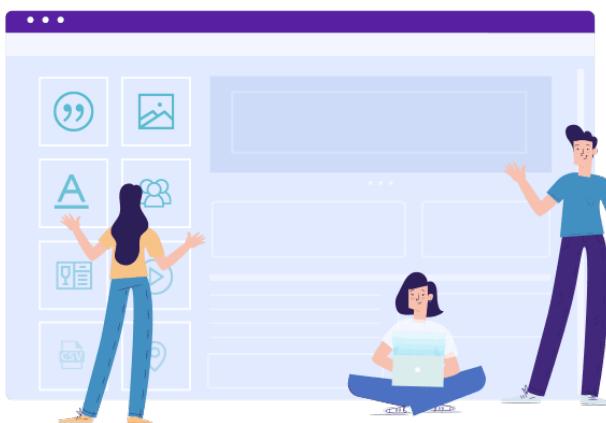
We used the starter template called "School" along with Gutenberg block to build our pages for our site.

Gutenberg Blocks – Ultimate Addons for Gutenberg by Brainstorm Force



Rating:
 4.9 out of 5 stars
Number of Ratings: 691

Version: 1.23.3
Last Updated: 6 days ago, from June 17, 2021
Active Installations: 300,000+



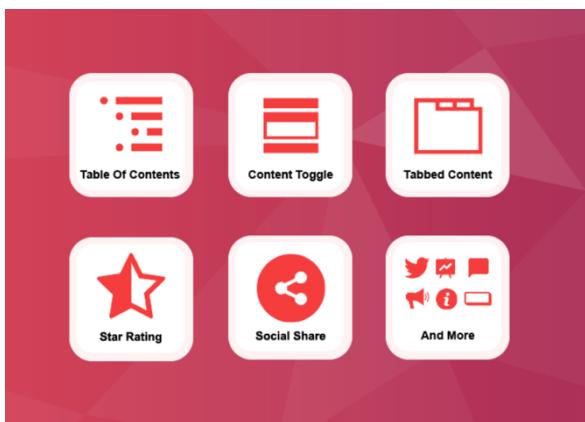
This plugin provides various Gutenberg blocks that can be inserted in a page. Some of the blocks it provides are Columns, Contact Form, Icon List, Post Grids etc.

Ultimate Blocks – Gutenberg Block Plugin by Ultimate Blocks



Rating:
 4.9 out of 5 stars
Number of Ratings: 333

Version: 2.4.7
Last Updated: 2 weeks ago, from June 17, 2021
Active Installations: 20,000+



This plugin also provides various Gutenberg blocks that can be inserted in a page. Most of the blocks help in displaying the content in an organized manner. Some of the blocks it provides are Columns, Contact Form, Icon List, Post Grids etc.

Ninja Forms Contact Form – The Drag and Drop Form Builder for WordPress by Saturday Drive



Rating:

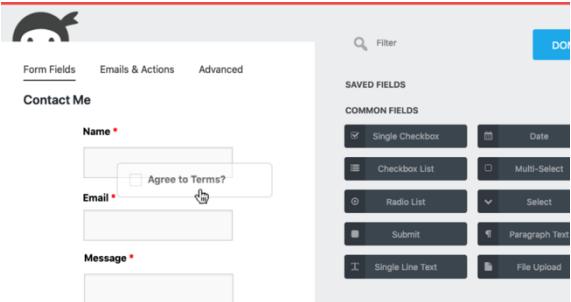
 4.9 out of 5 stars

Number of Ratings: 333

Version: 3.5.5

Last Updated: 1 weeks ago, from June 17, 2021

Active Installations: 1+ million



This plugin allows user to create forms to collect user entries. This form can be inserted in a page where site visitors can see them. It offers various fields like text, numbers, checkboxes, and dropdowns to be inserted.

We used the plugin to create our contact form and OBA forms.

Views for Ninja Forms – Display Ninja Forms Submissions on your site by WebHolics



Rating:

 5 out of 5 stars

Number of Ratings: 11

Version: 2.5.1

Last Updated: 3 weeks ago, from June 17, 2021

Active Installations: 900+

Name	Position	Office	Age
Airi Satou	Accountant	Tokyo	33
Angelica Ramos	Chief Executive Officer (CEO)	London	47
Ashton Cox	Junior Technical Author	San Francisco	66
Bradley Greer	Software Engineer	London	41
Brenden Wagner	Software Engineer	San Francisco	28
Brielle Williamson	Integration Specialist	New York	61
Bruno Nash	Software Engineer	London	38

This plugin allows user to display the entries from Ninja Forms in a tabular form. It also has downloading functions where the entries can downloaded in a .CSV format.

Ultimate Member – User Profile, User Registration, Login & Membership Plugin

Rating:

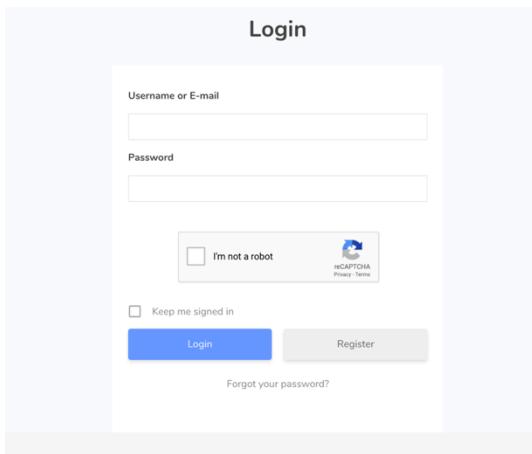
 4.4 out of 5 stars

Number of Ratings: 11

Version: 2.1.21

Last Updated: June 17, 2021

Active Installations: 900+



The screenshot shows a standard WordPress login form. It includes fields for 'Username or E-mail' and 'Password'. Below these is a reCAPTCHA verification box with the text 'I'm not a robot' and the reCAPTCHA logo. There is also a 'Keep me signed in' checkbox. At the bottom of the form are two buttons: a blue 'Login' button and a grey 'Register' button. A small link 'Forgot your password?' is located just below the register button.

This plugin allows users to make a customized front-end login page so that after a user signs in it redirects them to a page on the site instead of the WordPress backend page. It also helps in setting user roles and defining what access they have.