Semester Project 1

Fall 2019

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Website:

http://www.tonnessen.com/noroff/semester-1/semester-project-1/home

Attachments:

Scheduled Document: 2019-11-19_semester-project-1_emilie-tonnessen_project-plan_fp Gant Chart: 2019-11-19_semester-project-1_emilie-tonnessen_gantt-chart_fp

Table of Contents

1. Introduction	3
2. Planning	3
3. Research and sketching	4
3.1 Devices, pages and templates	4
3.2 Further research and inspiration	4
3.3. Sketching	4
3.3.1 Navigation bar	5
3.3.2 Footer	5
3.3.3 The pages	5
4. Design and layout	6
4.1 User experience and WCAG guidelines	6
4.1 Colour palette	6
4.2 Typography	7
4.3 Design elements	7
4.3.1 Logo	7
4.3.1 Icons	7
4.3.2 Hamburger menu	8
4.3.3 Banner image	8
4.4 Mock-up in illustrator	9
5. Development: HTML & CSS	10
5.1 Flexbox vs CSS Grid	10
5.3 Navigation	11
5.4 Footer	11
5.5 The pages	11
6. Testing phase	13
6.1 First test	13
6.2 Design and layout changes/corrections	14
6.3 Second test	15
7. Cleaning up the code	15
8. Discussion	15
9. References	16
10. Resources	16

1. Introduction

In this report I will discuss my work process over four weeks while creating the website that I have been tasked with during this period. The process includes planning, sketching, design and layout, development, testing phase and a discussion at the end, following a list of references and resources. You will read about what I decided to do and why.

2. Planning

The first two days of this project, I will write my scheduled document and create a Gantt chart. In the Gantt chart, there are four important phases, each of which has their own milestone. The planning and creation of a scheduled document and a Gantt chart is the first phase. Delivering the scheduled document and Gantt chart, is the first milestone.

The second and longest phase includes research, design and development. The development step will be the most time consuming during these four weeks and is the most important one. The second milestone will be the completion of the website.

The third phase consist of testing. I will be testing on different devices on both android, windows and iOS system. When everything is working, the website will be uploaded to the webhost. This is my third milestone.

The last and fourth phase is writing the report. When I reach this point, I have started writing logs for each phase and milestone in the process to make the report easier to write. The last milestone will be to submit the report with attachments and the link to the webpage.

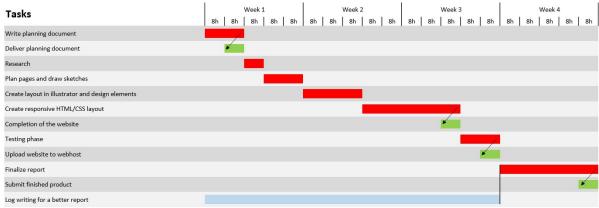


Figure 1 Gantt Chart

A more comprehensive version of the plan is provided in the attachments;

Gant-chart: 2019-11-19_semester-project-1_emilie-tonnessen_gantt-chart_fp Schedule document: 2019-11-19 semester-project-1 emilie-tonnessen project-plan fp

3. Research and sketching

3.1 Devices, pages and templates

Before researching and sketching, I decided on a couple of fundamental parts. What devices am I designing for? While testing during that course assignment for HTML & CSS, I found out that coding for mobile, tablet and desktop breakpoint, was one device too little. Therefore, I decided on four breakpoints, as demonstrated below.

Mobile	0 – 480px
Tablet	481px – 1024px
Laptop	1025px – 1600px
Desktop	1601px -

Table 1 Breakpoints for devices

Another question on my mind was, how many pages? I realised there was no proper answer to be gathered from similar sites. Instead I looked through the resources provided with content and decided to use six pages; "Home", "Events", "Exhibitions", "Visit Us", "Get Involved" and "About Us". First, my thought was to drop the "About Us", but I found that to be unreasonable as I often visit the "About Us" page when trying to establish a relationship with the brand. That site creates trust between the brand and the user. I found it important to include a support page as the museum is running on donations and volunteering from their customers.

3.2 Further research and inspiration

I managed to find a few sites from students that had been tasked with the same task as me previously. It was nice to see how previous students had solved this task and how different style they all had. The site that influenced and inspired me most was Science Museum¹. Seeing the call-to-action section on their homepage and the social media bar close to the footer, I knew I had to implement this in my design.

3.3. Sketching

Before sketching, I started drawing up templates for each screen device and pages, including separate templates for navigation and footer. This made the sketching process quicker.

The judgment on having a two-column layout or a three-column layout came as I was sketching for desktop. A Two-column layout would be simpler to perform, but that could give the design too much of a simple appearance. Creating a three-column layout would mean that I had to push the use of Flexbox to another level. In the end, I decided to go for the three-column layout, to challenge myself.

3.3.1 Navigation bar

The majority of the population is right-handed and will be accessing the mobile menu with their right thumb in most cases. To make the accessibility better, the most convenient placement for the mobile menu, will be on the right side of the screen. Therefore, I decided to have the logo on the left side, and the links and mobile menu on the right.

When deciding on six pages, I knew there would be an overlapping issue on the smaller sized tablet devices. To fix this, I made separate breakpoints for the navigation bar from the breakpoints I had chosen for the main content of the website. Right before the links would start overlapping, the design would change to a mobile menu.

3.3.2 Footer

In the footer I wanted to have the most important information without filling it up. I decided to have contact information, address and opening hours under the social media bar, as these are the most significant.

As I mentioned earlier in the report, I got inspiration from the website of Science Museum¹. In my design I wanted the social-media-bar to symbolize the end of the main content of the page. To accomplish this, I wanted the bar to have a solid colour that stands out from the footer and main content.

3.3.3 The pages

The layout will go from a one-column layout on mobile, to a two-column on tablet and laptop, to a three-column on desktop.

Home

The homepage is divided into 3 sections. The header, consisting of a full width and height image and a headline, a call-to-action section that will inspire to visit the museum, and a section that describes the core values of the museum. The call-to-action section became a priority above the text content, because it is more important to encourage the users to visit the museum, other than displaying a text-content most will not read.

Events, Exhibitions, Get Involved & About us

These two pages will have the same type of layout. An image describing the text-content underneath, for each section of related information. At the end I will have an image for styling purposes. On the "Exhibitions" page I will have a last image to fill up a section to create a balance in the layout.

Visit

First, I made a list with what kind of information should be prioritized first. While researching I found out that most websites prioritizes information over styling on these kinds of pages. With this reason, I decided to do the same, and make the best use of whitespace as possible.

4. Design and layout

The goal is to create responsive, interesting and simple pages by choosing the right typography, images, colour palette and layout.

4.1 User experience and WCAG guidelines

To create the best user experience, I will have to take in consideration that my users might not always be young and healthy. They could be elderly, having reading difficulties, having bad concentration, struggling with vision impairment, having motor disfunctions or other forms of disabilities. To make the user experience desirable for everyone, I will have to implement these considerations below from the start. The goal is to create a website for everyone.

- The content in the code should be logically ordered, in the right visual order.
- All clickable links should be accessible by only using tab and enter.
- The colours should be distinct from each other, for different types of colour blindness. To test this, I will be using a website called Toptal.com².
- Related content should be close or next to each other.
- A logical hierarchy should be followed.
- The font-size should be easily readable on all devices.

4.1 Colour palette

The first idea was to combine blue, red and green in bright colours on a black background. Testing these colours together, made it clear that this would not work for my website. I wanted the colours to be bold and outstanding, but having three strong colours did not fit. Therefor I settled on using one daring colour, red with a mix of pink. To complement this dominant colour, I selected a gradient of colours from black to white. The dark grey colour is extracted from the background colour of my header on the homepage, while the lighter grey colour is made to match the grey in the illustrations used on the website.

Personally, I imagine this combination creates a strong and simple look. It is bold, fun and attractive. The red offers a sense of passion and desire to learn, and the black symbolize the dark space and mystery above us.

One concern is whether the dark grey is too close to the black colour and will become hard to distinct from each other. I will have to take this in more consideration during the development phase and testing in different colour-blind modes.



Figure 2 Colour Palette

4.2 Typography

For typography I opted to use import from google fonts³. I began testing out different types of font-families next to each other to find those who matched the best and expressed the intended feeling of my website. For the test, I created a html file with inline stylesheet and opened it in Chrome.

The first idea was to find font-families that symbolized outer space, but after reading through the provided content of the page, I realised the website is about a much broader spectrum of science. It felt wrong to only have the font resembling this one part. Therefore, I started looking for fonts that would be more flexible, professional, yet interesting and exciting.

For the headline I wanted the font to have the letter "M" narrow on the top and wider on the bottom to create a pyramid effect. When I found "Julius Sans One" I knew this would be my headline. For the body font, I settled on the popular "Montserrat". I have previous positive experience with this font, and using a sans-serif for the body makes the content more pleasant to read. For the sub-headline I landed on "Jura" which gives a more futuristic and technology inspired look.

FONT-FAMILY Headline Julius Sans One Sub-headline Jura Body Montserrat

Table 2 Overview over font-families

COMMUNITY SCIENCE MUSEUM

THIS IS A SUB-HEADLINE

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum

Figure 3 Display of the font styles

4.3 Design elements

4.3.1 Logo

The initial idea was to combine text and icon, but I figured that just using text with a more special typography would be enough in this case. The font is meant to give a playful, cartoon look with a pyramid effect on the letter "M". The decision on making the middle word bold was to create more depth to the logo. Personally, I found this more appealing than just regular weight for the whole logo.



Figure 4 Logo

4.3.1 Icons

For the social media bar, I decided to use black icons with transparent background from Flaticon.com⁴. The position of the icons is made conscious. The Facebook icon is in the middle because Facebook is the most used and biggest social media of the three. Instagram is to the left, as this is the second biggest. Twitter is to the right, since Twitter is the least used of these three.



Figure 5 Social Media Icons

4.3.2 Hamburger menu

The moment I wanted to create a black navigation bar, I knew it might conflict with the way I used a toggle effect with the Chinese glyph that looks like a hamburger menu. The problem with this decision was that the glyph is black and will then disappear on a dark background. To counter this problem, I created an image file to replace the glyph.



Figure 6 Menu

4.3.3 Banner image

Seeing the image in the provided content, I knew this was the perfect header photo for my homepage. It is simple, clean, has room for a headline and possible to expand in Illustrator.



Figure 7 Mobile Banner



Figure 8 Desktop Banner

4.4 Mock-up in illustrator

The amount of days I used to design all pages for each device in Illustrator became one less than planned. This gave me one extra day with development. This is something I will have to take in consideration for future planning.

While creating the layout and design in Illustrator, I explored with the colour palette, logo and text content to see how they interacted. Note that the typography used in the mocks below are not the same typography that will be used in the finished product, as I could not find the same type of fonts from adobe fonts⁵ and google fonts³. The font used in the mock is just to represent the content in a similar style as intended for the website. Seeing how the

red, black, dark grey, grey and white worked together, I became certain that I have selected the right colour combination.

At this point of time I am not sure if I should go for a black background colour or a white, and if I should use the red colour on the sub-headlines or not. After testing out in illustrator, my mind was still not sure. To continue to the next phase I decided to test out the background colours more in the development process, and seeing them in the browser.



Figure 9 Home Desktop



Figure 10 Home Laptop



DMMUNITY



5. Development: HTML & CSS

Before I started coding, I made sure to have all my files correctly named, to prevent having to change the file system later. I decided to create multiple stylesheets for CSS, one for each page, one for navigation, one for footer and one master stylesheet to contain all the global codes, and import all the other CSS files into this one.

As the development started, I created a priority list, in which order I should code. The priority was to begin with the navigation bar, followed by the footer. From there I would work on the main content starting with "Home", and lastly "About Us". In the end I will go over image sizes, alternative attributes, unique descriptions in the head tag and after testing and implementing corrections and changes, I will then clean up my code to make everything look neat and semantic. I will then upload all the files to my webhost, which will mark my third milestone.

While coding I will constantly be testing the code in Chrome DevTools to check my work. Each day after finishing my daily work schedule, I will upload what I have done onto the webhost, to create a kind of backup in case something would happen to my files. Another backup will be uploaded to my OneDrive.

5.1 Flexbox vs CSS Grid

"The flexbox makes it easier to design flexible responsive layout structure without using float or positioning⁶."

- "CSS Flexbox", w3schools.com

"CSS Grid Layout is the most powerful layout system available in CSS. It is a two-dimensional system, meaning it can handle both columns and rows, unlike flexbox which is largely a one-dimensional system⁷."

- "A Complete Guide to Grid", css-tricks.com

After struggling for two days trying to make the best use of flexbox, making tons of codes in HTML and CSS, I came to a point where I did not manage to make it work. If I had decided to use a one-dimensional layout, I would not have this much trouble, but when I chose the two-dimensional layout for desktop, my problems began.

To solve the issue with flexbox I began looking elsewhere and came across CSS Grid. At this point, I did not know anything about CSS Grid or how to use it. I took it upon myself to learn this skill by myself. To learn this, I watched a guide on YouTube called "CSS Grid Layout Crash Course"8.

After learning this two-dimensional layout structure my life became easier and my codes became shorter and simpler. One line of code using CSS Grid removed fifteen lines of flexbox coding. In my honest opinion, CSS Grid is far more desirable to use rather than flexbox.

5.3 Navigation

For navigation, the idea was to use the checkbox and toggle effect to create a responsive hamburger menu for mobile devices, and make the best use of the Chinese glyph, the trigram for heaven, as my menu icon. The first problem I came across was that the glyph was black. Without knowing that I could fix this problem by specifying in CSS that the glyph should be white, I started creating a hamburger menu in Illustrator and put in the image file to replace the glyph.

When using an image file like this, I started to have some margin and padding issues with the drop down menu, as shown in the figure to the right. At this point, I was so frustrated and decided to stop working that day and continue the next morning. Waking up, I realised my files from the



Figure 13 Navigation bug

previous day was not saved and I had to do everything all over again. This is where I realised the Chinese glyph is supported as a font. Therefore, I could just use a simple line of code to correct my initial problem.

5.4 Footer

The footer came out as expected from the mock. I used the flexbox to create a responsive footer. I decided to keep the information centred with a max-width property to make the footer more desirable on the bigger devices. Having the three sections lined next to each other would create an unbalanced whitespace, therefore I decided to have the contact information and address underneath each other, to balance the height of the opening hours.

5.5 The pages

As the navigation bar and footer was completed. I began filling in a header and a main section in the body, then copy paste the codes onto every page. By doing this I secured the navigation bar and footer to be the same on all pages. The only changes needed, was the title and meta description in the head tag, and making sure the active id was on the correct link for each page.

HOME

First, I created the header using the same image from my mock. I added some length and width in Illustrator and then started testing out. Here I found out having the headline float above the banner image was not efficient, therefore I decided to go back in Illustrator to make the banner photo with the headline on it, so it would always stay in place. I made two separate banners. One for the mobile version and one for the tablet, laptop and desktop as they most commonly have a horizontal screen direction.

EVENTS & EXHIBITIONS

Already on these pages, I felt the challenge of using flexbox. Eventually I managed to create the intended layout, but it took me more time and effort than I was pleased with. After learning CSS Grid, I decided to remove the flexboxes and replace them with the CSS Grid system.

VISIT

This page was the most difficult and probably the most time consuming. It was not easy to make this look great on all devices. It took a lot of testing with the Chrome DevTools to make the code line up visually as I desired. Luckily, with CSS Grid I was able to make the layout two-dimensional by specify in the code where I wanted each section to be and how many columns and row it would take. The first idea was to use a full width map on the middle of the page and use an image at the end. However, this would cause an imbalance to the elements, so I removed the end image and used the map at the end instead, with full width. The only problem I am seeing with this decision would be that the map is now far away from the address section, and this could be a problem with the users having visual disabilities.

When I was prioritizing the content, I wanted the prize of the content to be first and opening hours second. By doing this the layout suddenly felt like it had a hole in it. Therefore, to force a sense of completeness I changed the content placement to have the opening hours come first, to create more balance, and then having the contact information and location wrap on top of each other. On mobile, tablet and laptop I used an illustration from UnDraw.com¹⁰ to make use of the whitespace that was created by a two-column layout. I removed the illustration from the desktop version, because it interfered with the layout and would have created another row with two empty columns.

GET INVOLVED & ABOUT US

I did not use as much time on these two pages as I did with the others. I filled in the content and made sure everything would behave as the same design-idea as "Events" and "Exhibitions" when resizing the screen. I used images I believed would be fitting for the content and styled email links and a donation link under the right content. After finishing up before the testing phase, I realised both last pages looked quite dull and uninteresting. At this moment in time I was not sure about how to fix this problem, therefor I started the testing phase and hoped that some inspiration would arrive when correcting bugs.



Figure 14 Mock of Get Involved Desktop version Figure 15 Mock of About Us Desktop version

6. Testing phase

When developing I am constantly using Chrome DevTools. During the testing phase, I will be testing the live versions on the four different devices that I chose for this project. Luckily, I have access to a broad variety of devices to test on, including android and iPhone, iPad, laptop and desktop. I will be testing the devices in both Chrome and Safari.

The testing phase will be divided into three parts, first test, corrections and design changes, and a second test. I will also be sending a link to the website to my father and mother. My father is a software developer for Datalex and has experience looking for bugs and coding mistakes. My mother has no clue about any form of technology, so I will perform some simple user tests on her. When the testing phase is over, I will look over the codes, and make everything neat and semantic before delivery.

6.1 First test

Always start with mobile first. During the first test on mobile I found a lot of bugs. The flexbox I used in my footer was mischievous, therefore I decided to swap the flexbox with CSS Grid. Another issue was the hamburger glyph changing itself on an android phone, from white to grey. This was something I did not know how to fix, and after considering what to do I decided to let this be. The reason was that I used this same method in my last website and got 100% score on that, and that the teachers recommended to use this method.

There was an issue regarding whitespace around elements and images, even if I specified zero in margin and padding for all surrounding elements. To fix this, I had to specify the affected elements and images to display as a block.

On tablet, the major issue was the "Events" and "Exhibitions" pages not being responsive. Reason for this was a mistake regarding failing to specify how many columns I wanted on the tablet version. Another issue while testing my website on an iOS Figure 16 Code for iOS devices system, was that the navigation bar was not sticking to the top.

position:sticky; position:-webkit-sticky;

After researching the cause of my problem, I found out that I will have to use an extra line of code that will work for iOS devices, as demonstrated in figure 16.

During the first test I also noticed some design and layout problems I wanted to fix. These includes an imbalance in the content on the "Visit Us", and a lack of styling on both "Get Involved" and "About Us". I will try to fix these issues in the next step of this testing phase.

6.2 Design and layout changes/corrections

To style the two pages, "Get Involved" and "About Us", I decided to use illustrations provided by UnDraw¹⁰ and pictures from Unsplash⁹. The site UnDraw provides free illustrations with the possibility to choose your own main colour to complement your own design.

The images chosen from Unsplash is for their meaning and symbolism, but also for the colour scheme to match the design. The man with the heart is to express love and appreciation for the help and support. The glass jar with light inside during a sunset is to symbolize the science in simple and beautiful forms. The snowy mountain with the space above gives a beautiful and mysteries feeling. This makes us recall how small we are. In the end, the images are used to give a harmonic and meaningful sensation. After discovering Unsplash, I also chose to swap out the pictures on "Exhibitions" as I found more fitting images. On the "home" page I made the call-to-action section taller and bigger with a gradient background colour, more like the one they use in ScienceMuseum¹.

To fix the imbalance on the "Visit US", I decided to swap opening hours and tickets, to create a more even and centred look. On the mobile, tablet and laptop I used an illustration to fill up the last whitespace, to make the two columns even.

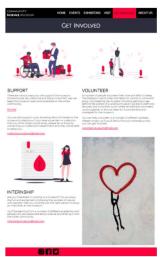


Figure 17 Get Involved corrections



Figure 18 Visit Us corrections

During this step I also wrote unique meta description for each page, resized the images to be under 200kb, and made sure all alternative attributes described their content properly and that all links were working as they should.

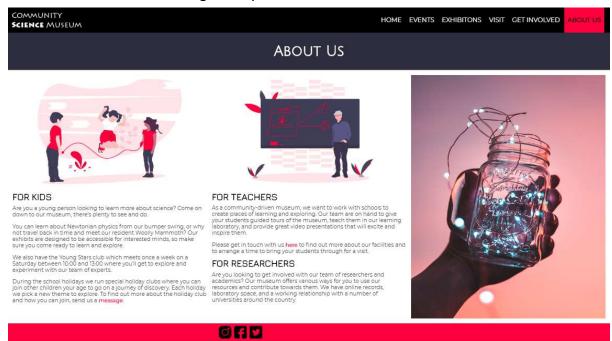


Figure 19 About Us corrections

6.3 Second test

In this second test, I checked everything from head to body. Luckily, this second test had few bugs and errors to fix and took me only a couple hours to finish. The most common issues were uneven whitespace between the elements, which I fixed quite fast. Some of the images and illustrations had different height, which caused an alignment issue. This was easily fixed in Illustrator by cropping and resizing the images affected.

7. Cleaning up the code

Before uploading the finished product to my webhost, I removed all the unnecessary codes and made everything look nicely formatted. I renamed some of the classes to a more logical description. I then removed the .html for all file's names within the code, as I have a rule running in my files that helps removing the .html in the browser's URL. When all was done, I uploaded all the files to my webhost and marked my third milestone as done.

8. Discussion

After finishing the third milestone, I started looking back on the whole process of creating a webpage, and how it has made me realise the actual time it takes to create something from scratch. In terms of the planning phase I will make some changes for the next project. First, I would merge the research and sketching phase as I did this simultaneously. Secondly, I would add a last correction of design and layout into the testing phase. I made a new Gantt chart showing how I worked during this four week period, as demonstrated below.

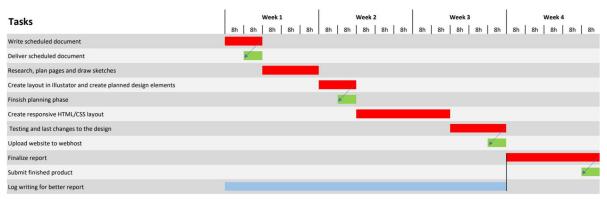


Figure 20 Real time Gantt Chart

Learning about CSS Grid was an important lesson to me, and gave me great value in this project, and for the future. Learning and creating more challenging and exciting two-dimensional layouts gave me a great sense of accomplishment, and I cannot wait until exploring the possibilities further.

On a more constructive criticism about the website I created, I am concerned about the design looking too simple and too easy. This was the intention, but I would like the page to look even better than a standard website format. In my opinion the webpage feels similar to the previous designs I have been making these last four months. I would like to be able to create websites of all forms and shapes in the future and not be stuck with one type of website. With this in mind, I am looking forward to keep making websites and explore more types of layouts and design.

To summarize these last four weeks; I created a realistic plan which I finished either one time or one day before the milestone deadline. I have been working consistently from Monday to Friday, 6-8 hours each day with a productive speed. I do love to work practically with codes and design, much more than working with the theoretical part, like writing the report. Writing logs during the process has helped me immensely. I learned how to use CSS Grid and managed to create a two-dimensional layout structure. I found new resources for illustrations and images. I learned more about myself, how I like to work and what part I would like to improve on. Truthfully, I am overall satisfied with myself and the finished product.

9. References

- 1. https://www.sciencemuseum.org.uk/ used 18.11.2019
- 2. https://www.toptal.com/designers/colorfilter/ used 26.11.2019 and 06.12.2019
- 3. https://fonts.google.com/ used 22.11.2019
- 4. https://www.flaticon.com/ used 22.11.2019
- 5. https://fonts.adobe.com/ used 22.11.2019
- 6. https://www.w3schools.com/css/css3 flexbox.asp used 09.12.2019
- 7. https://css-tricks.com/snippets/css/complete-guide-grid/ used 09.12.2019
- 8. https://www.youtube.com/watch?v=jV8B24rSN5o used 29.11.2019
- 9. https://unsplash.com/ used 04.12.2019
- 10. https://undraw.co used 04.12.2019

10. Resources

- Image; "Visiting Professor of Aeronautics"
 https://search.creativecommons.org/photos/67136011-0444-4635-8a6b-b8c8d13f1712 used 28.11.2019
- Image; "About Us" https://unsplash.com/@jdiegoph used 04.12.2019
- Image; "About Us" https://unsplash.com/photos/phIFdC6lA4E used 13.12.2019
- Image; "Get Involved" https://unsplash.com/@jannerboy62 used 04.12.2019
- Image; "Get Involved" https://unsplash.com/photos/jcc8sxK2Adw used 13.12.2019
- Image: "Cosmology" https://unsplash.com/@joshuaearle used 04.12.2019
- Image: "Evolution" https://unsplash.com/@scw1217 used 04.12.2019
- Image: "Ecology" https://unsplash.com/@dvxry used 04.12.2019
- Image: "Robotics and AI" https://unsplash.com/@liacastelli used 04.12.2019
- Image: "Biology and Medicine" https://unsplash.com/@chuttersnap used 04.12.2019
- Image: "Exhibitions" https://unsplash.com/@anthonydelanoix used 04.12.2019
- Icon: "Facebook" https://www.flaticon.com/free-icon/facebook 1051309 used 20.11.2019
- Icon: "Instagram" https://www.flaticon.com/free-icon/instagram 1077093 used 20.11.2019
- Icon: "Twitter" https://www.flaticon.com/free-icon/twitter-logo-on-black-background 60580 used 20.11.2019

Project Planning

The plan for this project is to use the two first days to create a gantt chart with this document describing the plan in more detail.

My first milestone will be to deliver the gantt chart and this document on the second day.

After finishing the first milestone, I will start researching what I want to include in my website and how to design for the target audience. As soon as I finish researching, I'll start planning my pages and draw sketches of the ideas for hand, starting with mobile layout.

When the sketches are finished, I will continue in illustrator. This is where I will be looking at the design part, choosing a colour palette, settling on typography and designing different elements I decided on in the research phase.

After the design phase is done, I will start creating the HTML/CSS code. Firstly, I will create a responsive navigation bar with a hamburger menu for the mobile version. Then I will finish the footer, before working on the main content on each page. My focus will be to create the pages for smaller devices first, then work myself up to desktop. I know that I want to create layout targeting mobile, tablet, laptop and desktop. This phase is the biggest and longest of all my phases, and I have devoted five days of my time to work on the development phase. My second milestone will be to complete the website.

As everything is implemented and ready, I am going to test the site on different set of physical devises to see it in real life, and not just using the chrome DevTools. My parents will also be my guinea pigs in this testing phase. When everything works as intended, and any bugs or complications are fixed, I will upload the files to my webhost, which is my third milestone.

The last week, I have devoted my time to write and finalize the report. During the entire process I will write logs while working on the different phases of my project so I can write an overall better report.

The fourth and last milestone will be submitting the finished product.

