Design Systems Engineer

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Digital Media Design
Capstone Proposal

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Title, Target Audience, Personas, Empathy Maps, Metrics

1.1 Project Title

Design System Engineer

1.2 Capstone Category & Related Courses

1.2.1 Capstone Category

Web Design and Application Development

Primarily, it is a Web Design and Application Development project as it will be a web application for reading articles and viewing course videos. Additionally, I will also be using what I learned from my Instructional Design and Animation, Film, Virtual Reality courses to create the content.

1.2.2 Related Courses

Web Design and Application Development

CSCI E-12 Website Development
CSCI S-3 Web Programming/JavaScript
DGMD E-20 Mod, Mobile Front-End Design I
DGMD E-27 Mod, Mobile Front-End Design II

Animation, Film, Virtual Reality

DGMD E-50 Visual Communication Design
DGMD E-5 Exploring Digital Media

Instructional Design

EDUC E-111 Adult Online Learning: Theory

1.3 Project Goal

The primary goal is to provide an accessible and thorough curriculum and resources for all designers and engineers looking to build a design system. There

are some existing design system courses, but most are only available in person, and all are limited to a specific aspect of design system building.

1.4 Learning Goals

1.4.1 Technology

Svelte[1] for the course website
Leveljs[2] + GraphQL[3] for Design Token management
ConvertKit[4] for subscriber and potential customer management
CrowdCast[5] for live webinars

1.4.2 Curriculum development

Leverage pre and post webinar surveys to tweak and tailor content to learners' needs.

1.5 Elevator Pitch

Every company or project with an interactive element (website or application) would benefit from a sophisticated design system, but most companies are still figuring out how to build one. This course provides instruction and resources for starting from scratching and iterating on a functional design system.

1.6 Target Audience, Personas & Empathy Maps

1.6.1 Target Audience

The primary target audience is any JavaScript or Front-End Engineer who wants to build a design system for their company, project, or product. This could also include designers with some engineering experience.
According to the 2016 Stack Overflow Developer Survey[6], "JavaScript is the most commonly used programming language on earth. Even Back-end developers are more likely to use it than any other language." Meanwhile, the most recent data provided by SlashData showed that there were 10.7 million JavaScript software developers in the world in 2018[7]. However, I do not think all JavaScript engineers are part of the target audience. A more reasonable subset would be Egghead.io subscribers which is around 10,000.

1.6.2 Personas and Empathy Map

Target User 1: Design System Engineer

The design system engineer is in charge of building their system while also managing the expectations of their manager. They are likely to have some experience with building systems but unlikely to have fomally worked on a long term design system at scale. They are trying to determin best practices to work more efficiently and reduce technical debt. Additionally, they are consider how they would build out their team and onboard new employees.

Janet. Design System Engineer.

"I'm just making it up as I go."

"A design system is the best way to help us grow."

"What would you like to see in our system?"

Says

Does

Meets regularly with product engineers.

Meets regularly with Design.

Codes.

Thinks

There's got to be a more efficient way.

How do I know what to build next?

How do I get management to see the value of the system?

Feels

Overwhelmed with all that needs to be done.

Responsible for building something product engineers will respect.

Target User 2: Startup Owner

A technical owner that is bootstraping their startup. They have heard about design systems and that they could improve design and engineering efficiency. They have some design skills and have contracted a designer to help with intial work. They equity comes from their own time and resources so they're worried about wasting time building a system if it doesn't provide a good ROI.

Frank. Startup Owner.

Says

"Design and experience set us apart."

"Help users solve their problems and they will love our product."

"Iterate quickly. Test early and often."

Does

Whatever it takes to move faster.

Switches hats regularly.

Thinks

Building more efficiently is the best way to stay afloat.

Passing process trends are a waste of time.

Feels

Overwhelmed with all that needs to be done.

Target User 3: Design System Designer

The design system designer is primarily concerned with the benefits of consistent design across the whole company. They can't design everything for every product and often products don't have a dedicated designer. The design system design wants to provide design resources to help product teams create user experiences that are consistent with the design even if they have limited design experience.

George. Design System Designer.

Says

"Design lead companies are winning."

"Consistent design builds trust with our customers"

"Do things right even if it means redoing them."

Does

Meets regularly with engineerging.

Meets reguarly with product teams

Meets reguarly with customers

Thinks

Design by committee will kill productivity.

A design sytem is the best way to prepare the company for inevitable design changes.

Feels

Challenged trying to stay abreast of changing technologies.

Responsible for representing the needs of the customers.

1.7 Metrics, Rubric and User Survey

1.7.1 Metrics

Functionality

- ☐ Does the website appear complete?
- ☐ Is the navigation functional and intuitive?
- ☐ Are interactive elements functional?

Visual Design

- ☐ Does the website look intentionally designed?
- ☐ Does the student trust the site and content?
- ☐ Could this be a portfolio piece?
- ☐ Does it represent design systems?

Interaction Design

- ☐ Can the user understand the interactivity?
- ☐ Does interaction add value to the content of the website?
- ☐ Does it work as expected?

Content

- ☐ Is the content unique?
- ☐ Is the content organized and easy to understand?
- ☐ Does the content provide value?
- ☐ Is it easy to find what the user is looking for?
- ☐ Are the videos well edited?
- ☐ Are the code snippets and resources easy to find and use?
- ☐ Is the audio clear?

Analytics

- ☐ Do the analytics reports indicate that the website is being used?
- ☐ Who are the users?
- ☐ What is their feedback?

1.7.2 Rubric

Functionality				
1	**2**	**3**	**4**	**5**
The content seems incomplete. The navigation is not usable. Styling is incomplete.	The content is complete. Bare styling beyond browser defaults.	The content is complete, organized, and useful. The navigation is intuitive and easily discoverable.	The website is consistently styled. The content organization is well thought through. The navigation is intuitive and seamlessly integrated with the rest of the site. The website is systematically styled.	The website looks professionally designed and developed. The content is semantically organized. The design itself is an example of the power and practical application of a design system.
Visual Design				
1	**2**	**3**	**4**	**5**
Fonts and colors are not the browser default.	The website contains customized fonts, colors, backgrounds, and images.	The website uses colors that work well together. Typography choices are optimized for readability. The page layout is intuitive.	The design is intentionally chosen to best present the content. The typography and color choices do not distract but augment the functionality and content.	The site design would feel at home on Dribbble or Awwwards.

Interacion Design				
1	**2**	**3**	**4**	**5**
The site has navigation.	The navigation is functional and organized. It indicates the current page.	Intentional, organized pages and navigation. Interactive elements add value and direct the students to the content they are seeking.	The website and navigation are intuitive without drawing unnecessary attention.	Interactive elements add delight to the student's experience.
Content				
1	**2**	**3**	**4**	**5**
The site exists and has some content.	The content explains the basics.	The content is synthesized in a way that the students learn something new. They start to see the value of design systems.	Students can easily connect the content to practical applications in their current jobs and circumstances.	The site and content are valuable resources that the students recommend to team members. The students return regularly for new content and to use it as a refresher resource.
Video Content				
1	**2**	**3**	**4**	**5**
The videos exist and cover the material.	The videos are edited, and the dialog has some pacing.	The videos are succinct. The audio is of high quality. The dialog is scripted and flows.	The videos are edited to short easy to digest segments. The dialog is well thought through but also sounds like a natural conversation.	The video and audio are of professional quality and feel like they were recorded in a studio.

1.7.3 User Survey

1. How did you find the website?
2. Was it easy to understand the purpose and content of the website?
3. Does the content seem useful for you in your current role?
4. Was the website well organized?
5. Did the navigation make it easy to find what you needed?
6. What was your initial impression of the design of the website?
7. Were the videos well-paced to maintain interest?
8. Were the audio and dialog clear?
9. Did you think the code snippets and resources are practical examples of the material?
10. Do you think you would return to the website?
11. Would you recommend the course to your colleagues?
12. What content do you think is missing from the website?
13. How else could the website be improved?

1.8 Life of the project beyond capstone

Completing this capstone project will continue to provide me with residual passive income and will be used to help me meet promotion criteria at work. Additionally, I hope to use the material to speak at conferences and workshops while continuing to adjust the content to the changing industry needs.

2

Competitor Review and Analysis

2.1 Competitors

2.1.1 Work #1: Testing Javascript

Authors

Kent C. Dodds

One-line description

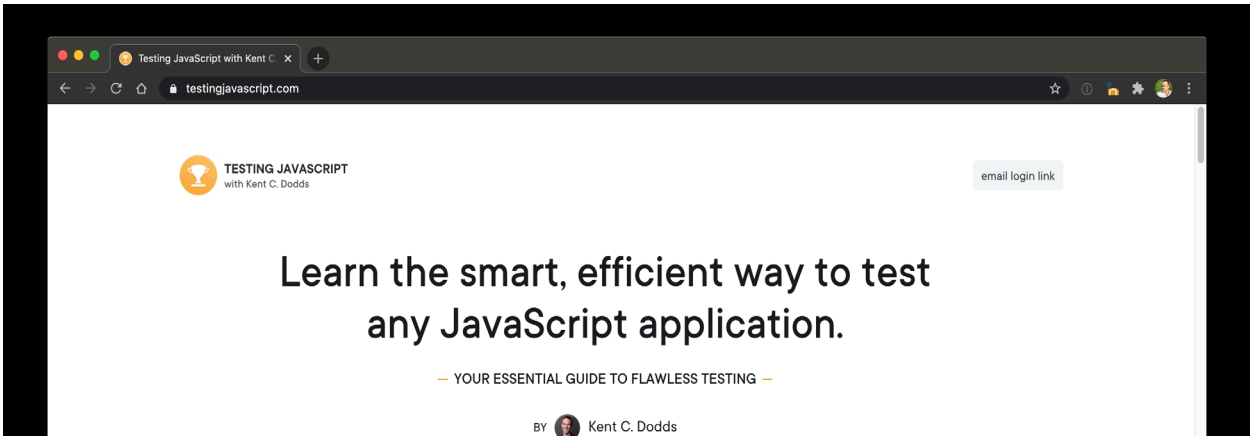
Testing JavaScript[8] is the first large course Egghead.io launched as a separate project and partnership with an Author

Strengths of this work

Thorough, deep content into a topic that is well known by engineers, but not well understood in practice. The podcast style interviews provide great industry insight to the course and its application.

Shortcoming of this work

Testing JavaScript is an important topic, but it can be polarizing as not all engineers or organizations believe it has a sufficient return on investment.



2.1.2 Work #2: CSS Selectors in Depth

Authors

Garth Braithwaite

One-line description

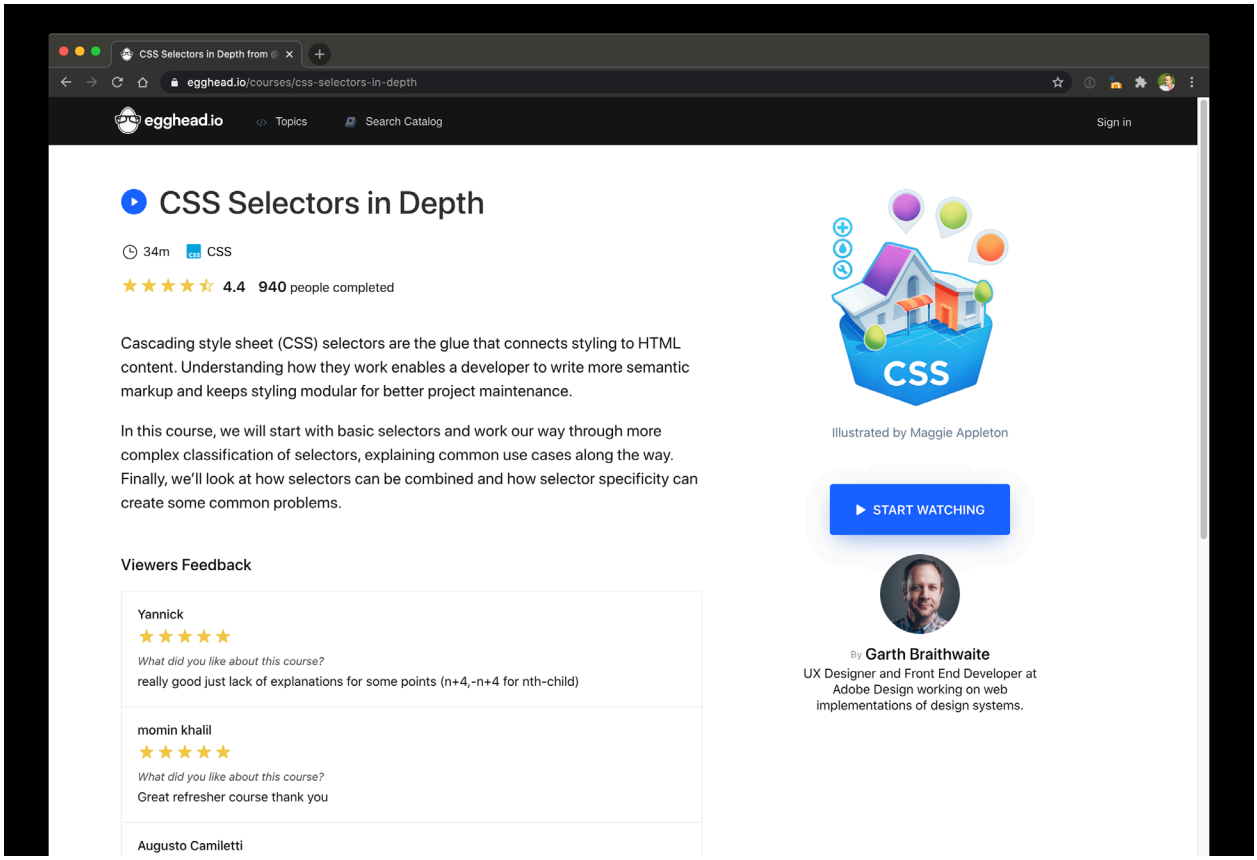
CSS Selectors in Depth[9] is video course for understanding CSS selectors

Strengths of this work

Easily digestible chunks of video that can be consumed as needed or in order. Every video has a corresponding CodePen with the content so you can focus on the video and not on typing along with the instructor.

Shortcoming of this work

The scope is too limited and doesn't use enough real-world applications.



2.1.3 Work #3: Design Systems and Pattern Libraries

Authors

Janice Rohn

One-line description

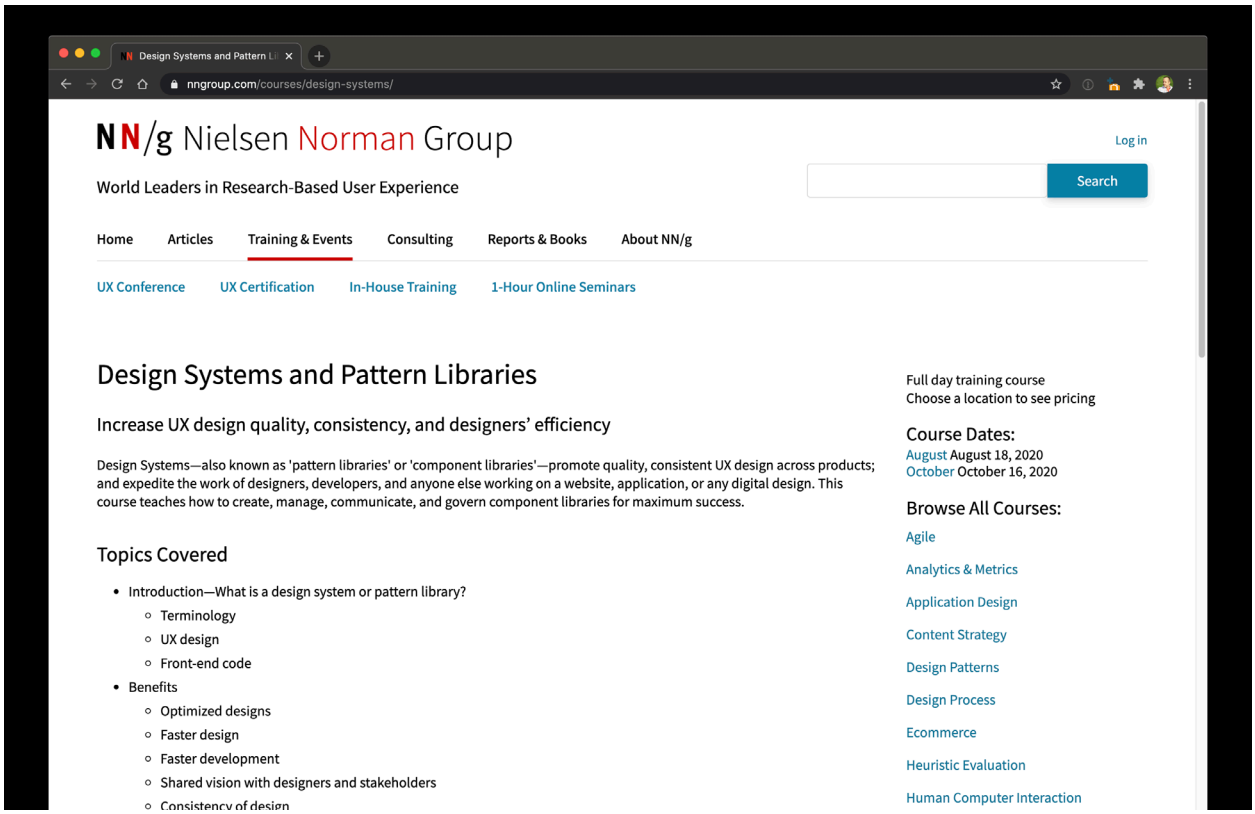
Design Systems and Pattern Libraries[10] is a full-day training course on how to create and maintain a design system.

Strengths of this work

In person courses give the learners a chance to fully immerse in the content without being distracted by life and work. Additionally, learners are able to ask questions specific to their needs and get real time feedback.

Shortcoming of this work

in-person workshops are helpful but have an extremely limited reach. Also, a single day is not really enough time to go in-depth on the hands-on portions of creating a design system.



2.1.4 Competition analysis matrix

	Design Engineering	Testing Javascript	CSS Selectors in Depth	Design Systems and Pattern Libraries
Website Type	Dedicated design system course website.	General testing course website.	Part of a general online code learning website.	A description of in person workshops scheduled.
Pricing Structure	Early bird pricing.	Tiered pricing. Monthly and yearly subscriptions.	Yearly subscription.	One time cost.
Cost	$5/month includes early access.	$67/$136/$332	$250/yr (included in Egghead.io subscription)	$979 (discounted to $791 with early bird pricing)
Total Course Time	45 min (intial release)	8.5 hours	34 min	6 hours
Course Type	Online video	Online video	Online video	In person workshop
Additional features	Bonus videos, newsletter, podcast with design sytem influencers.	9 bonus video interviews with testing experts	Egghead subscription includes all of the Egghead library.	In person networking
Pacing	Self paced	Self paced	Self paced	Instructor paced
Availability	Always available	Always available	Always available	Availability depends on conference schedule
Fully annotated transcripts	Yes	Yes	Yes	No
Full source code	Yes	Yes	Yes	No
Printable resources	Yes	Yes	Yes	Yes
Target Audience	Front end Engineers and Designers	Engineers	Engineers	UX Designers

3

Technology Requirements

3.1 GitHub Pages

Description: static website hosting for open source projects
Professional experience: I've been using GitHub and GitHub Pages as part of my professional workflow for seven years.
Alternative technologies: Netlify, GitLab Pages, Amazon S3, Heroku
Reason for using this technology: GitHub Pages is free and integrates into GitHub well. Also, because I will be hosting a static site, I'm not locked into this platform and can change if needed.
How it will be used: I'll be hosting the main website and video content on GitHub pages.

3.2 Svelte

Description: static website generator and JavaScript framework.
Professional experience: I've used it for some minor personal projects, but not part of my full-time job.
Alternative technologies: Nextjs, Nuxtjs, Gatsby
Reason for using this technology: Performance and removing my dependency on Reactjs.
How it will be used: I'll be using it to create the website and eventually, the web application for viewing the course.

3.3 ScreenFlow

Description: screen capturing software.
Professional experience: I've used ScreenFlow for teaching courses and recording several podcasts over the last ten years.
Alternative technologies: Snagit, Camtasia, Screencast-O-Matic, iMovie
Reason for using this technology: I already own a license, I've used it for years, and I like the editing workflow.
How it will be used: I will use it to record the videos for the course.

3.4 Twitch

Description: live-streaming service.
Professional experience: I have a little personal experience with posting content on Twitch, but I've spent time watching.

Alternative technologies: YouTube, Steam.me, Caffeine
Reason for using this technology: There is a broad tech audience on Twitch, and there are many existing resources for getting started.
How it will be used: to help vet my course material, I'll be hosting live webinars on Twitch.

3.5 ConvertKit

Description: email marketing service.
Professional experience: I have some limited personal experience with ConvertKit.
Alternative technologies: Constant Contact, Campaign Monitor, ActiveCampaign, Drip, MailChimp
Reason for using this technology: I'm partnering with Egghead.io to build and market this course, and they've had good experiences with ConvertKit in the past.
How it will be used: I'll be using it to build an audience through regular email newsletters.

3.6 Heil PR 40

Description: dynamic XLR mic.
Professional experience: I've been using a Heil PR 40 for the last six years.
Alternative technologies: Blue Yeti, Shure SM7B, Rode Procaster, Audio-Technica AT2035, Audio-Technica ATR2100x, Samson Q2U
Reason for using this technology: I already own one and love it.
How it will be used: I'll be using it to host the live webinars and record my course videos.

3.7 Apollo X Twin Duo

Description: Thunderbolt 3 audio interface that supports UAD plugins.
Professional experience: I have been using it for the last three years.
Alternative technologies: Apogee Symphony, Presonus Firestudio, Onyx Blackjack
Reason for using this technology: I already own one and the necessary plugins.
How it will be used: It is my primary audio interface and is loaded with plugins (i.e., Manley Voxbox) that work well with my voice.

3.8 Z Cam E2C

Description: streaming camera.
Professional experience: I use it daily as my primary webcam.
Alternative technologies: Blackmagic PCC 4K, Blackmagic PCC 6K, Blackmagic MSC 4K, Panasonic GH5
Reason for using this technology: It supports power over ethernet and has an HTTP API for me to control more easily.
How it will be used: I'll be using it as the primary camera in my live webinars and course videos.

3.9 ATEM Mini Pro

Description: multi-camera switcher and live-streaming device.
Professional experience: I use it daily as my primary webcam interface.
Alternative technologies: ATEM Television Studio HD, Elgato Camlink 4K, Blackmagic Ultrastudio Mini Recorder
Reason for using this technology: Of the camera interfaces I've tested, it is the most

reliable. It offers some excellent functionality with multi-camera switching and an API. The only downside is the maximum resolution of 1080p.
How it will be used: I'll be using it as the primary camera interface and live switcher in my live webinars and course videos.

Additional Instructions for projects with an Instructional design component: I won't be using an existing LMS as it is self-paced video course; I'll be using some LMS like functionality in my custom website/webapp.

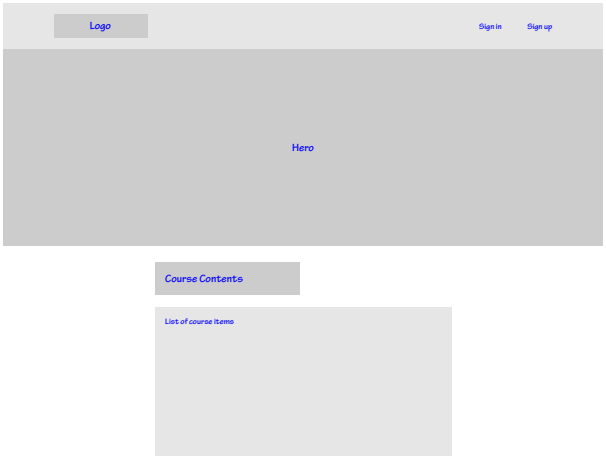
4

User Journey and Design Workflow

4.1. How the product will be used?

4.1.1. Homepage

This is the primary landing page for the course website when it has launched. It will have a prominent hero section with a call to action and a simple course description with a list of the course topics.

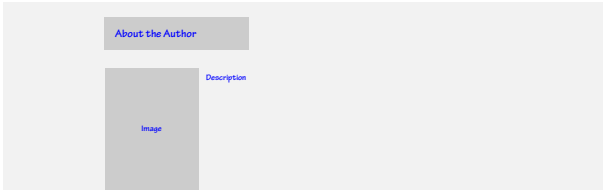


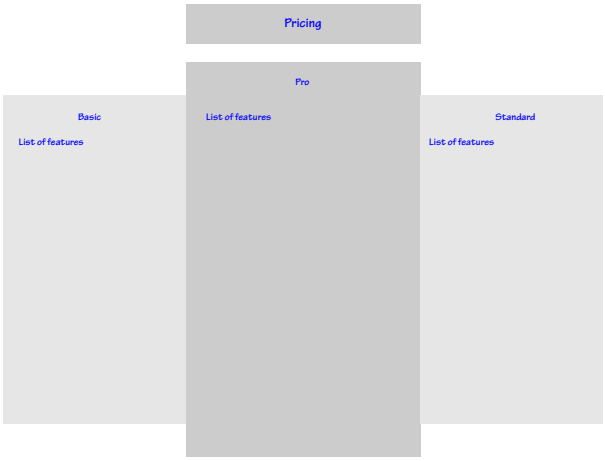
4.1.1. Industry Expert Interviews

This section contains a list of interviews with industry experts that are available with pre-orders and pro-level purchases.

4.1.2. About the Author

This section gives an overview of the author's background and skills that qualify him to teach this subject.



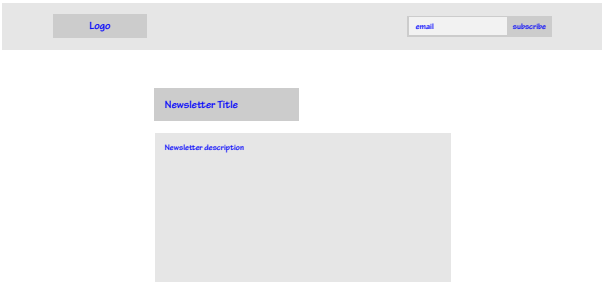


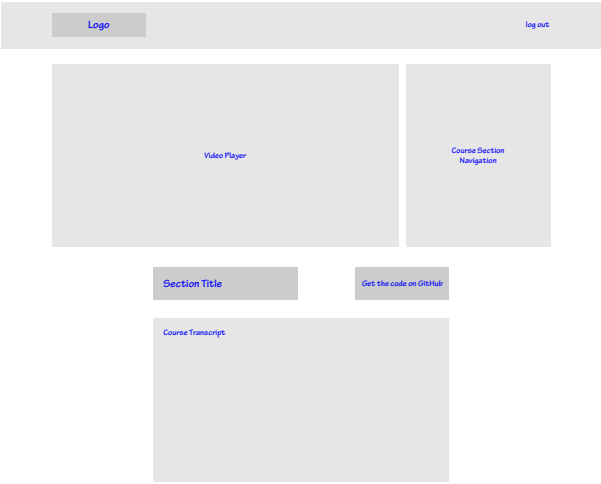
4.1.1. Pricing

A pricing section shows what tiers are available for purchase and what the customer will receive with each level.

4.1.1. Newsletter Homepage

Before the course is available for purchase, the website will be a landing page for a topical newsletter. Encouraging subscribers will help with marketing when the course is available for sale and will allow the content to be tested with readers.





4.1.1. Course Material Page

This is the view the learner will have after they purchase the course and start viewing the material.

4.1. How the product will be built

4.1.1. Tech stack:

Hosting: GitHub Pages

GitHub projects will be used to automate the release and publication of the website with updated materials.

JavaScript framework: Svelte
CSS organization: Suit
Media hosting: Egghead.io

Embedded videos and player provided by Egghead.io
Authentication using Auth0

4.2. Instructional Design Brief

4.2.1. 6 Facets of Understanding

Explain

Students can identify the following resources and how they are used: design tokens (i.e., global, static, calculated, inherited), modular CSS, JavaScript components, design assets, themes, scales, component variations, and component states.

Interpret

At this level, students can identify the value of design tokens and how they can be leveraged to improve the maintainability of a design system implementation. Additionally, students can explain how they could use the Explain section's resources to build, evolve, and maintain their design system.

Apply

Through the practical application of the previous facets of understanding, students will begin building and organizing their design system and design system team.

Have perspective

Students will have an appreciation for how to create value in their design system and implementation for the rest of the company that would use it.

Empathize

Designers, developers, and product managers will understand the value of the design system resources to each other and how the company (stakeholders and users) could come to see the value in the design system.

Have self-knowledge

Designers, developers, and product managers will be able to see the limitations of their design system and what is needed to be addressed to increase adoption.

4.2.2. Why/Enduring understandings

Design tokens are the fundamental

building blocks of a design system. Making them easy to access, modify, and maintain will determine a design system's potential flexibility.
Keeping CSS separate and distinct from the JavaScript implementation of a design system allows for greater adoption by web developers and products.
Naming is one of the hardest parts of creating and maintaining a design system. Frequent name changes provide additional overhead to implementations and products.
Use semantic versioning to communicate to users and products what is changing in both the design and implementations.
Not all implementations are going to be web-based and should not be designed for only web technologies.

4.2.3. Learning Flow

I see students using the course in 3 primary ways. The first is for the novice student, and they are recommended to cover all of the course videos from start to finish. The second is for seasoned design system students who are likely to pick and choose the most exciting videos and their current knowledge and goals based on titles and descriptions. The final is for students who have already watched the course but will refer back to specific videos, and their needs change to refresh their knowledge and apply the material in new ways.

4.2.4. Learning Theory

The Design System Engineering course will be primarily based on the Individualized Instruction Theory. Likely, all the students will be coming from different places in their previous experience and knowledge of design systems. There will be some common threads in their expectations, but the course will be self-paced. Also, the video segments will be designed to stand on their own so students can jump in at any point to refine their knowledge.

4.2.5. Pedagogies

Behaviorism

For students with little experience or knowledge of design systems, follow along, step-by-step instructions will be given for designers and engineers to learn the real work of building a design system.

Cognitivism

Students can use provided CodePens of sample course material to adjust existing design systems to suit their needs.

Constructivism

Students take the information learned to build their design system and are given the recommended criteria for determining the strengths, weaknesses, and next steps for their design system.

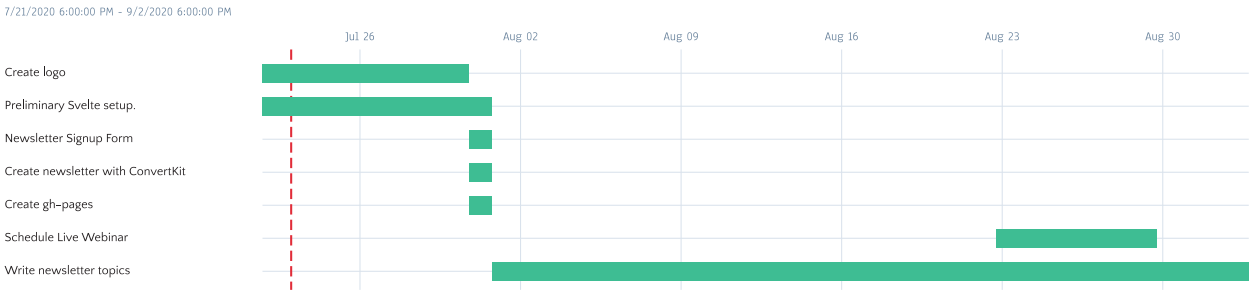
5

Work Plan and Milestones

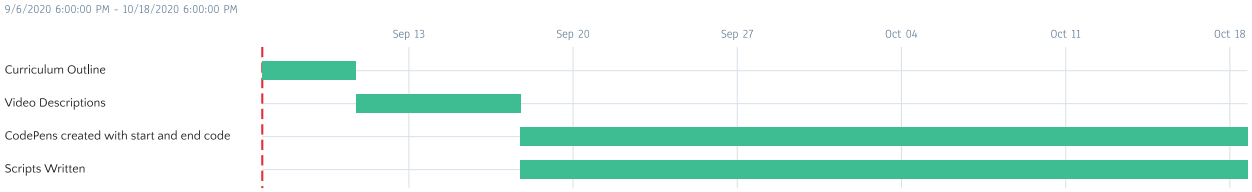
5.1 Workplan, Milestones

Progress will be tracked in GitHub issues, projects, and milestones. I have added all the appropriate data and generated Gantt charts for the corresponding milestones with a tool called GanttLab.

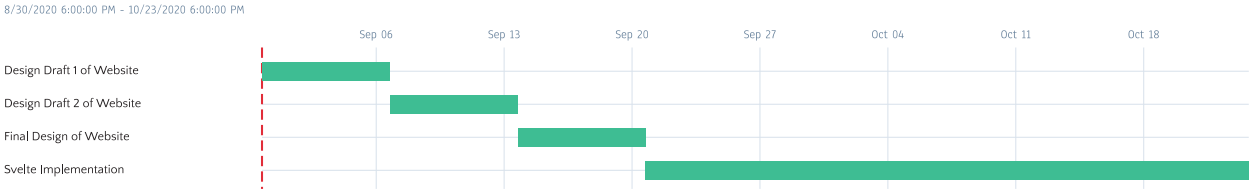
5.1.1 Pre Capstone Milestones



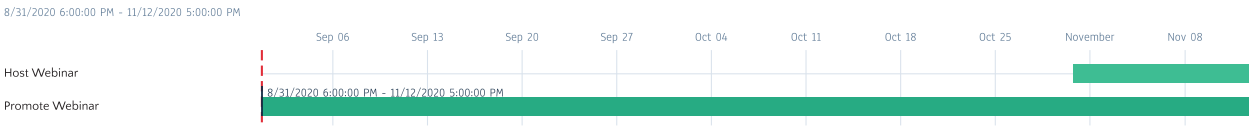
5.1.2 Curriculum Milestones



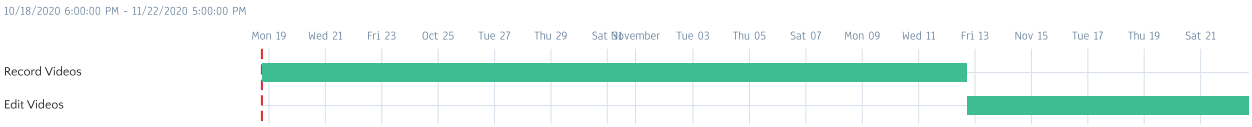
5.1.3 Website Milestones



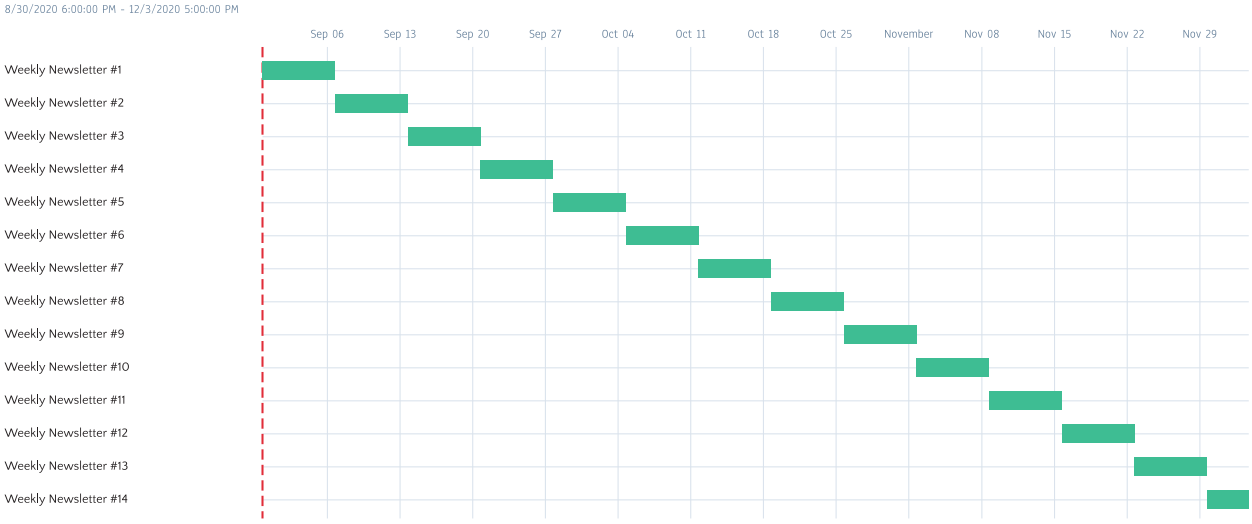
5.1.4 Webinar Milestones



5.1.5 Video Milestones



5.1.6 Newsletter Milestones



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