Project Stat

Project Plan Version: 1.2

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Team X

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Stakeholders

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Version History:

Date	Version	Description	Authors
11-1-2019	1.1	The project schedule was updated to allow for more time during the testing phase of the project development cycle.	Patrick
11-1-2019	1.1	The resource list was updated to include additional items.	Sam Danlin
11-5-2019	1.2	The section Risks was changed to ensure that the listed items were events that would hinder the team during the development phase.	Sabrina Danlin Harsh

Project Background:

Partnered with the Army Educational Outreach Programs (AEOP), our project will aim to provide STEM enrichment opportunities to middle school aged students to adults, especially those that are educationally disadvantaged. With individuals in science, technology, engineering, and mathematical fields underrepresented, AEOP has the vision of increasing these numbers by providing competitions, research lab apprenticeships, and scholarships within the STEM field to keep individuals competitive and engaged. Despite their attempts to bring these numbers up, according to annual AEOP evaluation data, reports have indicated that many students that participate in these programs are from underprivileged urban areas and do not have access to strong research design and statistical instruction necessary to fully utilize these opportunities.

Our project is to create a multi-module web interface that will provide interactive content, teaching statistics on a easy-to-use platform as a free, online educational resource. With this implemented, we can provide the teachings necessary for students participating in AEOP and hopefully eliminate the knowledge gap of statistics in particular. On our website, we will be providing lessons to teach the content, labs to reinforce the learning, and quizzes to test their understanding of the many modules that we will be available.

The users that we are anticipating to use our website and their exclusive functionalities are the following:

- Administrators: Administrators will be able to see the master list of all users registered on the website, along with general statistics of the users such as date of birth and the state. They will be able to export database information into a CSV or CSV-like (ex. JSON).
- Teachers: Teacher will be able to enroll students into the course, as well as monitor their classroom's dashboard, which will have all of the students enrolled achievements and progress on the modules.
- Students: Students will be able to identify their teachers and add themselves in a classroom, in the event that they have already registered for the course already.
- Guests: Guests are able to sign up for the course as a student or teacher.

All users (guests, students, teachers, admin) on the website will be able to view all static pages (home and about), leave an inquiry for administrators for additional information, and use the statistics calculator page.

All signed in users (students, teachers, admin) will be able to view and participate in interactive learning modules, labs, and quizzes, as well as receive badges and certificates for the respective content once completed. In addition, all signed in users will be able to test out of a lesson by

passing a preliminary quiz and share their accomplishments through the badges/achievements page. Users are also able to change their account information (email and password).

Statement of Work:

The purpose of this project is to provide a free, online statistics course for underprivileged individuals in AEOP as a simple resource to assist in the development of their STEM skills. This online course will have an audience focus of grade 8 and higher, but other individuals are welcome to utilize the resource to strengthen their statistical instruction for competitive STEM fields. Dr. Sondergeld and Dr. Stone shall provide statistical content in order for Team X to package them into interactive modules on Metriks website.

Specifications of our project is listed below:

Specification	Description	Task Assigned to
Web Interface Design	A web interface shall be designed for users to interact with and complete modules	- Danlin - Sabrina
Database	A database shall be utilized to store information from the website server	- Sam - Harsh
Sign Up Functionality	A sign up feature shall be implemented to give guests the option to make an account to access the course modules	- Sam - Harsh
Login Functionality	A login feature shall be implemented in order for students, teachers, and admins to keep track of progress	- Sam - Harsh
Class Registration	The ability to register a class of students shall be given to teachers. This shall allow the system to know that these students belong to that specific teacher and they will like to monitor their progress.	- Sam - Harsh
Statistical Calculators	A statistical calculator shall be developed using Open Source code to provide a tool where students can perform simple statistical functions. These functions shall include z-test, one-sample t-test,	- Patrick - Thai - Sabrina - Danlin

	independent samples t-test, dependent samples t-test, pearson correlation, simple regression, and chi square.	
Interactive Modules	Content for each unit and module shall be repackaged into interactive lessons. Potential interactive activities shall include answering multiple choice questions and dragging/dropping choices into answer buckets. Answers will pop-up on screen after user clicks submit.	- Everyone
Answer Pop-Ups	Pop-up answers shall aid students in understanding the reason for the correct answers in each module. Submitting answers during the lesson shall trigger the correct answer with an explanation to be shown	- Patrick - Sabrina - Thai
Quizzes	To accompany each module, 10 question quizzes shall be developed to test a student's retention of the lesson with potential question formats being multiple choice and true/false. ● Pre-Quiz: Before each module, students shall have the option to test out of the module if the student has prior knowledge of the lesson. Students will have to score a 100% to test out. ● Post-Quiz: After each module, students shall be tested on their retention of the lesson's information in the form of a quiz. This quiz will be the same as the pre-quiz.	- Sabrina - Danlin - Thai
Labs	Per each module, students shall have the ability to complete labs to ensure they are retaining the information. Completion of interactive modules and labs shall give students access to the post quiz.	- Patrick - Sabrina - Danlin - Thai
Automatic Grading	A system shall be implemented to have student quiz answers graded automatically so they receive their scores and badge right after they submit if they pass	- Patrick - Sam
Badging System	A badging system shall be created to accompany modules as a way to motivate students. Students shall be able to receive badges in the following ways: ● Completing each module's quiz	- Patrick - Sabrina - Danlin - Thai

	● Completing every module in a given unit ● Completing the full course	
Tracking Progress Tool	A tool shall be created in order for students to track their individual progress within the modules, teachers to track the progress of student they register, and admins to track any user using the website.	- Patrick - Harsh - Danlin
Printing Capability	Users shall have the ability to print out quizzes or labs. Any content printed from the site will be watermarked.	- Harsh - Thai
Information Exporting	Admins shall be given the ability to export the database of all users who signed up for the course for data analysis. This information shall include any information users entered upon signing up. Admins could also export progress of the users. All exported files will be in a CSV format.	- Sabrina - Danlin
Contacting Admins	Users shall have the option to contact the admins/stakeholders, Dr. Sondergeld and Dr. Stone, through a contact us page if additional information is needed (not to be used for content help).	- Sam - Harsh - Thai

For all the documents listed below, all team members are expected to contribute:

- Customer Requirements - The customer requirements document will provide the stakeholders a list of all the features we will be implementing into their website with a list of features that are out of scope
- Defect Report - As the testing phase is taking place, any defects the team finds will be reported with a summary of how we were able to fix it
- Release Notes - Once the first version of the website is completed and released, a first version of released notes shall also be distributed. This version shall describe all the features that users are able to do. Any feature release notes shall describe any updates made to the site and fixed bugs

Resource List:

Resource	Description	Availability
Hosting Server - Metriks	Remotely accessible internet server with	Provided by the Stakeholders, will be

	complete web server functionality	available for the entire duration of the project
Domain Name	Website name that corresponds to the Metriks host; allows for recognition	Provided by Stakeholders, will be available for the entire duration of the project
Microsoft Visual Studio	A development application to provide an environment to develop the website	Provided by Drexel, available for the entire duration of the project
Statistic Curriculum	Content that will be taught on our website	Provided by Stakeholders, will be available for the entire duration of the project
Microsoft SQL Server	The environment where the data is stored	Software is free for 12 months, will be available for the duration of project
Microsoft Project	Project management tool that will help us develop schedules and assign resources to tasks	Software owned, available for the entire duration of the project
Adobe Photoshop	Imaging software that will be used to create badges	Software owned, available for the entire duration of project
Moqups.com	Online mockup tool to create wireframes, diagrams, and UI prototypes	Online tool, available for the entire duration of project; however trial limits usage
Github	Hosting for software development	Online tool, available for the entire duration of the project
Programmers	Programming knowledge is needed to create the website	Our team consists of one programmer and three members with basic coding skills
Security Experts	Knowledge needed for the security and privacy of the website to ensure little to no vulnerabilities	Our team consists of two members who have cybersecurity expertise

Assumptions:

- Resources:
  - Metriks will provide host server for the website
  - Stakeholders will provide a definite up to date curriculum

- ○ All team members will contribute to the design and development of the website
- ○ Stakeholders and team members will be available to meet bi-weekly for planning phase and weekly for implementation phase
- ○ The team will design, create, and implement the badges required for the badging system
- ● Schedule:
  - ○ Resources will be available within the project schedule
  - ○ Initiate Project and Project Planning will be finished in two months
  - ○ Project Design and Project Development will be largely completed within the end of Winter term, but will continue development until late Spring term
  - ○ Project Testing will be executed after Project Development is complete
  - ○ Project Release will be completed at the end of Spring term
- ● Technology:
  - ○ The team will use Visual Studio and GitHub for web development
  - ○ The team will use Moqups for web design, visualization
- ● Scope:
  - ○ Project scope will not change after stakeholders and project team decide on the scope statement

Project Schedule:

- ● Initiate Project:
  - ○ Define the scope of the project
  - ○ Define the website's style (Color pallette, font type, etc.)
  - ○ Define the different types of users
  - ○ Define users requirements
  - ○ Define what an interactive module entails
  - ○ Define requirements for quizzes
  - ○ Define requirements for labs
  - ○ Define what tools need to be developed (e.g. graphing tools)
  - ○ Define what is meant by a badging system
  - ○ Define requirements for the badging system
  - ○ Define level of security needed for users & data
  - ○ Define how to register for the course
  - ○ Get access to stakeholders' web environment
  - ○ Get clarification on data that is to be collected from users
  - ○ Developing preliminary project schedule
- ● Project Planning:

- ○ Build GUI prototypes for stakeholders' approval
- ○ Preliminary Project Plan Document
- ○ Customer Requirement (Baseline)
- ○ Project Plan Document (Baseline)
- ○ Software Requirement Specification Document
- ○ Final Presentation
- ○ Software Requirement Specification Document (Baseline)
- Project Design & Development:
  - ○ Plan the software design of each static web page
  - ○ Plan the software design of the relational database
  - ○ Plan the software design of student web page
  - ○ Plan the software design of teacher web page
  - ○ Plan the software design of admin web page
  - ○ Develop relational database
  - ○ Plan the software design of the badging system
  - ○ Develop static web pages
  - ○ Populate database with temporary data
  - ○ Plan the software design of the login and sign up pages
  - ○ Plan the software design of database to csv functionality
  - ○ Develop login and sign up functionality
  - ○ Plan the software design of account setting webpage
  - ○ Plan the software design of achievement page
  - ○ Plan the software design of the statistical calculators
  - ○ Plan the software design of monitoring pages
  - ○ Plan the software design of the interactive modules
  - ○ Plan the software design of the labs
  - ○ Plan the software design og the printable assignments
  - ○ Plan the software design of the quizzes
  - ○ Develop student dashboard
  - ○ Develop teacher dashboard
  - ○ Import course content
  - ○ Develop admin dashboard
  - ○ Develop account settings page
  - ○ Develop achievement page
  - ○ Develop admin monitoring page
  - ○ Develop teacher monitoring page
  - ○ Plan the software design teacher registering class page and student register with a teacher

- ○ Develop teacher registering class page and student register with a teacher page/setting
  - ○ Develop quizzes
  - ○ Develop interactive modules
  - ○ Software design implementation
- Project Development:
  - ○ Develop labs
  - ○ Develop tool for converting database to csv
  - ○ Develop preliminary quizzes
  - ○ Develop statistical calculators home page
  - ○ Develop automatic grading system
  - ○ Develop functionality of the calculators & pages
  - ○ Develop static feedback for interactive modules
  - ○ Develop viewable answer key for labs
  - ○ Develop module completion checks
  - ○ Develop printable assignments
  - ○ Develop badging system
- Project Testing:
  - ○ Use code coverage tools
  - ○ Test all web pages intended functionality
  - ○ Check the account security
  - ○ Check the database security
  - ○ Software Testing Documentation
- Project Release:
  - ○ Release Notes

For the calendar view of the task list, please view the attached PDF called *Team X - Excel V2.pdf*

Risks:

- Potential difficulties may arise when designing our own badging system- stakeholders or partners may not approve the designs
  - ○ Handling Method: Stakeholders are willing to fund a third-party vendor to create the badges in the event that this will occur
- Stakeholders may not be as responsive as necessary for our development and planning

- ○ Handling Method: Inform faculty advisor about the communication problems and continue with persistent efforts
- Integrating our own statistical calculator with limited programming abilities could prove to be difficult
  - ○ Handling Method: Collect links to external statistical calculators and create a page on the site to store the information for viewing
- Large amount of content and data, especially with the requirement of interactive modules, on the hosting server could cause a storage space issue
  - ○ Handling Method: Request additional space from the Stakeholder and remove redundant or obsolete data found on databases
- Stakeholders may have a change of requirements if AEOP does not approve
  - ○ Handling Method: Allow stakeholders to communicate with AEOP and relay information to our team; we will have to get approval of changes from our advisor