

## **Sabbatical Leave Proposal**

### **A. Applicant**

Name: George Sturr

Department: Mathematics

Type of Leave: Project

Leave Dates: Spring 2019

### **B. Purpose of Leave**

The purpose of this leave is to develop data analysis and statistical software for students of Math 15 Elementary Statistics. The software will provide tools that enhance the learning experience of SRJC statistics students, operate within a web browser across multiple platforms, and be freely available.

### **C. Leave Objectives**

1. To improve the instruction of Elementary Statistics by developing a software application that can be used by students to analyze data and perform the statistical calculations taught in Math 15 Elementary Statistics. The software will operate within a web browser on a laptop, tablet or desktop computer.
2. To develop a language translation feature for the software that enables both English and Spanish versions of the software.

### **D. Narrative**

Elementary Statistics is one of the most popular mathematics courses offered at SRJC. Transfer students planning to major in Business, Psychology, Sociology, Biology, Elementary Education and many other fields are required to take this foundation course in statistics. These students have diverse interests and goals and come to the course with considerable differences in mathematical ability and preparation.

The goal of this project is to develop free statistical software that specifically targets this audience. Currently there are a variety of statistical software packages used in our elementary statistics courses. None of them, however, are designed primarily for use in a community college learning environment. They are either too complex, costly or do not function properly on modern mobile devices.

The software I plan to develop for this project addresses this need by providing the following features:

1. A simple intuitive interface that promotes understanding of statistics by community college students working at an introductory level.
2. Complete support for all forms of data visualization, regression modeling, and statistical analysis studied in an SRJC Elementary Statistics course.
3. A responsive design that enables the application to function smoothly on laptops, tablets or desktop computers.
4. Translation into Spanish.
5. Free access through any modern web browser.

The first phase of the project will be to write the code and test the essential elements of the software required by working with an existing prototype. This code will include:

1. A data management table.
2. Probability and statistical inference tools.
3. Chart creation tools.

Other components may also be required as the project evolves. This software development will take several months. Most of my sabbatical will be devoted to this phase of the project.

The second phase will be to develop the language translation feature. During the first phase of development, the software will be coded to allow strings (menu items, instructions and other phrases) to be easily substituted with their translations into other languages. To complete the translation feature I will search for open source Spanish translations of common phrases and collaborate with my colleagues to translate any remaining, mathematically unusual phrases. These translations will then be added to the code and tested. Once this is done, the application will be able to switch between English and Spanish versions with the click of a button.

By the completion of my sabbatical, I will have an operational preliminary software application to demonstrate to my department. There will certainly be bugs and unanticipated reactions to the design, but the outcome of the sabbatical will be the first iteration of an operational statistical software application.

Initially the software will be hosted on my personal web site. Later I hope to find multiple sites, possibly the SRJC site, to host the application. The ultimate goal is to offer free access to the software from a web browser for all community college students.

## **E. Evaluation Summary**

1. How will the objectives of this sabbatical leave enhance my work performance at the college?

The software developed by this project will enhance my instruction of Math 15 Elementary Statistics. It will also provide the opportunity to share my work with colleagues through professional development presentations or workshops.

2. How will the objectives of this sabbatical leave benefit students in my discipline?

Math 15 Elementary Statistics is a requirement for a wide spectrum of majors and is one of the most popular transfer courses offered by the SRJC mathematics department. As a result of this project students of Math 15 will have access to a freely available web application that complements and reinforces traditional lectures and homework assignments.

3. How will the objectives of this sabbatical leave benefit my department?

SRJC mathematics instructors will be able use the software with their statistics students and in courses with related objectives.

4. How does your proposed project address the SRJC Strategic Plan and/or your department's educational plan?

This project addresses the SRJC strategic goal of implementing responsive instructional practices to increase the learning and success of our diverse students.

## **F. Abstract for Board Proposal Summary**

During this sabbatical, George Sturr will develop a freely available web application that can be used by students of Elementary Statistics to analyze data and perform statistical calculations. The software design will promote understanding of data analysis and statistics by college students working at an introductory level, will be translated into other languages and function on a variety of devices, including desktop computers, laptops and tablets.

