



Client

Dept. of Applied Mathematics & Statistics

Faculty contact: Prof. Terry Bridgman (tbridgma@mines.edu)

Background

The Dept. of Applied Mathematics & Statistics (AMS) is responsible for delivering approximately 200 sections of mathematics/statistics classes per year. To facilitate this demand, we also hire a multitude of undergraduate and graduate students to serve as graders for almost every section offered. We would like to consolidate the information necessary for assigning and tracking student hires per course.

Project Description¹

Just prior to the beginning of each semester (Falls, Spring and Summer), AMS assigns graders to those course sections offered in the upcoming term. Version 1 of this effort was implemented as a Field Session project during the summer of 2022. That implementation was done using Microsoft Office Automation Tools. The necessary information (from potential student graders and from faculty members in need of graders) was captured via Microsoft forms and, upon submission, fed into a Microsoft Teams based Excel spreadsheet. Functionality was then added in the spreadsheet to do a “first pass” assignment based on student preference/capability and faculty preference/need.

Now that the tool has been used for 2-3 assignment cycles, Version 2 needs to implement some upgrades:

- Currently the associated files reside in a student’s Microsoft Team’s environment. This needs to be made either more portable or moved to a central location within the Mines environment as an app that can be accessed and administered by several faculty members with AMS;
- Student assignment needs to be upgraded:
 - If a student is capable of grading multiple sections, assignment should minimize the number of faculty members supported. (in other words, the first pass approach may evolve into a multiple pass approach – assign & revise)
 - Once the initial assignment is complete, the ability to quickly add a student that has not completed the survey and assign them to a course/section and lock them into that position. Currently regeneration of the assignments often rewrites “fixed” assignments.
 - Efficient incorporation of historical data for student performance and use of this information to provide preferential assignments for those students performing well.
- Ultimately, it is still desirable to have this as a database-driven application. Thus, at a minimum, this project would incorporate database functionality into the Microsoft Office Automation flow:
 - efficient upload/creation of tables of student/faculty/course data
 - efficient download of grader assignment/course information

Skill Set / Team Size / Deliverable Requirements

1. Database design and implementation including views and stored procedures
2. Team size of 3-4 students
3. Deliverable should be a portable application or centrally installed application with administrative and user access. Any requirements for 3rd party software requiring purchases will need prior approval.
4. The team can develop remotely, though faculty sponsor will be available throughout field session for frequent design conversation/meetings.

¹ More detailed requirements and user expectations will be available prior to project start.