User Manual

Lumberjack Balancing

Project Sponsor: Dr. Scot Raab

Project Mentor: Paul Deasy

Team Members: Riley Burke, Cristian Marrufo, Sergio Rabadan, Braden Wendt

Table of Contents

Introduction

We are pleased that you have chosen Lumberjack Balancing for your administrative needs. Lumberjack Balancing is a powerful desktop application designed to automate and streamline faculty workload calculations at Northern Arizona University. It offers a robust, user-friendly solution that minimizes manual errors and saves time for associate deans and administrative staff. Some of the key highlights include:

- Automated workload calculation from Excel files based on configurable institutional policies
- Real-time input validation to catch data issues before they affect reports
- Dynamic policy customization via editable Excel sheets without any need to modify the code
- Comprehensive report generation with clear overload/underload indicators
- Minimalist graphical interface designed for non-technical users

The purpose of this user manual is to help you, the client, successfully install, administer, and maintain the Lumberjack Balancing application in your real-world context. We aim to ensure that you can confidently rely on this system for accurate, efficient, and policy-aligned faculty workload assessments for many years to come.

Installation

Lumberjack Balancing should initially be installed on your system by our team. However, in case of system updates or the need for reinstallation, follow these clear, step-by-step instructions to reinstall Lumberjack Balancing.

Step-by-Step Installation Guide:

1. Install Python:
    - Download Python (version 3.10 or later) from python.org.
    - During installation, ensure to select “Add Python to PATH”.
2. Install Required Python Libraries:
    - Open your terminal or command prompt.
    - Run the following command to install dependencies:
      ```
      > pip install pandas openpyxl xlsxwriter pyqt6
        pyinstaller
      ```
3. Deploy the Lumberjack Balancing Files:
    - Download the Lumberjack Balancing application file directory containing all necessary app files from our project’s Github repository.
    - Copy the Lumberjack Balancing files into a designated folder. Ensure the folder structure looks like this:
      ```
      Lumberjack Balancing/
      ├── algorithmPolicy.py
      ├── excel_processor.py
      ├── main.py
      ├── workload_policy.xlsx
      ├── raw_data.xlsx
      ├── special_courses.xlsx
      └── instructors_track.xlsx
      ```
4. Compile the Application:
    - Compile the Python scripts into a standalone executable using the following PyInstaller command:
      ```
      > pyinstaller --onefile --windowed --name
        LumberjackBalancing main.py
      ```
    - Locate the executable in the newly created `/dist` folder named `LumberjackBalancing.exe`.
5. Run the Application:
    - Simply double-click `LumberjackBalancing.exe` to run Lumberjack Balancing.

Configuration & Daily Operation

After installation, the following steps detail how to configure and operate Lumberjack Balancing daily:

Configuration Steps:

- Setting Up Workload Policies (`workload_policy.xlsx`):
    - Open the workload policy excel file provided in your application folder.
    - Modify the policies according to NAU's needs. Be careful to maintain the existing formatting.
    - Save the Excel file before use.

- Special Course Adjustments (`special_courses.xlsx`):
    - Update the special courses file with any exceptions or special-case workloads currently assigned.
    - Save the file to apply these adjustments.

- Instructor Track Updates (`instructors_track.xlsx`):
    - Edit the instructor track file whenever instructor categories or tracks change.
    - Save the updated file to ensure the system calculates workload correctly.

Daily Operational Workflow:

1. Launching Lumberjack Balancing:
    - Start the application by double-clicking the Lumberjack Balancing executable (`LumberjackBalancing.exe`).
2. File Selection:
    - Click on the provided buttons to select the appropriate Excel files:
        - Raw Data File (`raw_data.xlsx`)
        - Policy File (`workload_policy.xlsx`)
        - Instructor Track File (`instructors_track.xlsx`)
        - Special Courses File (`special_courses.xlsx`)
3. Running Workload Calculations:
    - Click "Run Workload Calculation".
    - Monitor progress through the application's progress bar.
4. Review Results:
    - Upon completion, an Excel summary report will be generated.
    - Review the report for workload calculations, overload/underload indicators, and faculty details.

Maintenance

Routine maintenance ensures your Lumberjack Balancing application remains reliable and efficient:

Recommended Maintenance Schedule:

Monthly:

- Backup the following files to a secure location:
  - `workload_policy.xlsx`
  - `special_courses.xlsx`
  - `instructors_track.xlsx`
- Check and clean temporary files located in the system temporary folders (such as %TEM% on windows).

Semester-End:

- Archive processed Excel reports in a clearly labeled directory.
- Update the `instructors_track.xlsx` file to reflect new hires, departures, or category changes.
- Review and update workload policy and special workload assigned courses.

Source Code Access and Backup:

The complete Lumberjack Balancing source code and related files have been provided via the following dedicated Github repository:

https://github.com/rjb489/LumberjackBalancing

Troubleshooting

Below are solutions to common issues encountered during operation:

Issues	Resolutions
"Cannot convert NaN to integer" Error	Check Excel files for empty fields in "Enroll Total" or "Max Units" columns. Ensure these cells contain numeric values or 0.
Incorrect Workload Calculation	Confirm policy file updates are saved correctly. Restart the application after editing policies or special courses.
Application Not Starting	Verify Python installation and dependencies (`pandas, pyqt6, openpyxl, xlsxwriter`). Reinstall these dependencies if needed.
Excel Report Not Generated	Ensure you have appropriate write permissions in the output directory. Run the application as an administrator.
Long Processing Times	Limit raw Excel input data to necessary entries. Check data for redundant or excessively duplicated rows.

If further issues persist, refer to the development documentation or contact the developers using the provided contact information.

Conclusion

Thank you for choosing Lumberjack Balancing to support your faculty workload management needs. We are confident that this tool will bring years of value to Northern Arizona University by streamlining complex administrative tasks, improving accuracy, and empowering associate deans with clear, policy-aligned workload reports. Our team has designed this system with your real-world challenges in mind—prioritizing usability, flexibility, and maintainability at every step.

It has been a privilege to contribute to NAU's ongoing pursuit of academic excellence through this project. We are proud of the solution we've built and excited to see it deployed in a way that meaningfully improves daily operations for the university's administrative staff.

With best wishes from your Lumberjack Balancing developers:

- Riley Burke – rjb489@nau.edu
- Cristian Marrufo – cjm556@nau.edu
- Sergio Rabadan – spr233@nau.edu
- Braden Wendt – bmw245@nau.edu

While we are all moving on to professional careers, we would be happy to answer short questions in the coming months to help you get the product deployed and operating optimally in your organization.