**Waterfall:**

Create a scheduling system like leopardWeb. The system should utilize a database of users, and should implement different user roles including instructors, admins, and students.

After the system is tested bugs will appear over time. These bugs will need to be patched. Additionally, user feedback can be integrated into the system in order to make it meet additional needs.

Final testing will need to be done when the entire system is built. This testing can be handled by unittests to check basic functionality like updating users and classes.

The system should be designed in separate pieces. Focusing on the databases early is important as it will prevent the need to go back and update code later. The software will be designed in Python.

Unit testing can be handled by pythons unittest framework. Tests can be written for each individual component as the system is built out to ensure functionality.

Requirements Definition:

* Create a scheduling system like leopard web
* Utilize databases to store user information
* Create an easy-to-use interface for users
* Provide different levels of user access depending on the classification of the user. For example, students should not be able to add or remove classes from the system

System and Software Design:

* The overall system will need to be made up of individual components. This will include
  + A database
  + A Database control node to handle all database transactions
  + A set of classes defining users and user-related functions
  + A user interface

Implementation and Unit Testing:

* Breaking up the project into sections including the databases, user class, and others, write the individual components
* Utilize python unittest framework to create tests for every component

Integration and System Testing:

* Combine all components including the databases, and UI into one application
* Have human users test the program and attempt to find bugs

Operation and Maintenance:

* As user feedback is returned from end-users make improvements as necessary
* Continue to verify that packages are up to date and patch any security vulnerabilities