Customer: CS Department
Point of Contact: Director of Undergraduate Studies: Dr. Jaromczyk

Business Requirements

BR 1: We would like to provide instructors an online interface to enter ABET information for each of their courses.

BR 2: We want to expedite the process of ABET accreditation renewal.

BR 3: We would like to follow all federal guidelines for security and secure data storage.

BR 4: We want to increase the quality of course portfolios.

BR 5: We want professors to have a better understanding of what is expected of them in regards to course portfolios.

BR 6: We want the website to provide help information in a way that does not take the professor away from their current task.

BR 7: We want the website to minimize the number of steps required so that users are more likely to use the system.

BR 8: We only need the system to support the University of Kentucky Computer Science Department

BR 9: We need the system to be difficult to misuse. Specifically we don't want professors to be able to edit course portfolios from previous semesters.

BR 10: We want users to be able to log in with their linkblue accounts.

Functional Requirements

*See **additional information 2** for specifics on what information is required or modifiable when creating or modifying objects.*
** See **additional information 3** for specifics on the output zip file format*

FR 1: The system must allow instructors to log in.

FR 2: The system must allow instructors to start a new course portfolio.*
    FR 2.1: The system must allow instructors to select associated student learning outcomes from a list of possible outcomes when creating a new course portfolio.

FR 3: The system must allow instructors to edit an active course portfolio*
    FR 3.1: The system must allow instructors to add exactly three artifacts*
        FR 3.1.1: The system must automatically select a group of students to be evaluated when an artifact is added to the course portfolio
    FR 3.2: The system must allow instructors to edit artifact information.*
    FR 3.3: The system must allow instructors to upload student evaluations.*
        FR 3.3.1: The system must confirm that the instructor removed any student identifying information from a submission on upload.
        FR 3.3.2: The system must display the current slo rubric above where professors enter evaluations so that they can easily reference the rubric.

FR 4: The system must allow instructors to view all of their course portfolios.
    FR 4.1: The system must display active course portfolios separate from inactive course portfolios.

FR 5: The system must allow instructors to download their complete course portfolios.**

FR 6: The system must automatically compute all affected scores when a student evaluation is uploaded.

FR 7: The system must allow the DUS to download all course portfolios. Due to the infrequency of this operation it will be a manual process involving the DUS and the developer.

FR 8: The system must mark course portfolios as inactive two weeks after the last day of finals.

FR 9: The system must display course portfolio progress on all active portfolios. Progress is defined as the percent of uploaded student evaluations
    FR 9.1: The system must display course portfolio progress on the screen at all times when editing an incomplete course portfolio.

FR 10: The system must provide inlined question marks, that when clicked provide additional information on a specific topic

FR 11: The system must provide instant validation feedback when the user is entering data info a form.

FR 12: The system must display the date that a course portfolio will be marked as read only.

FR 13: The system must allow linkblue accounts to be added to the whitelist.

FR 14: The system must randomly select the group of students to be evaluated for each artifact.

Non-functional Requirements

NFR 1: The system should support at least 30 concurrent users.

NFR 2: The system should use a whitelist when allowing linkblue accounts to login.

NFR 3: The system should use linkblue to handle login.

NFR 4: The system must use a database when storing any persistent data.

NFR 5: The system must encrypt potentially sensitive information using AES, a random initialization vector, and a salt.
  NFR 5.1: The system must encrypt database backups.
  NFR 5.2: The system must encrypt student evaluations.
  NFR 5.3: The system must encrypt user profiles.

NFR 6: The system must create a database backup every week at 12am on Sunday.

NFR 7: All database backups must be stored in an encrypted AWS S3 bucket.

NFR 8: The system must use a consistent color scheme when referring to student evaluation scores (exceeds: blue, meets: green, partially: yellow, not: red).

NFR 9: The system must sanitize any user entered data.

NFR 10: The system refers to students using their index. A student's index is defined as their index into the course's alphabetically sorted roster.

NFR 11: The system will never request any student identifying information from the professor or external systems

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User Assumptions

- An instructor is able to start their own course portfolio
    - This assumes they know information such as course number, section number, assigned student learning outcomes, number of students, department, etc
- An instructor might not understand the following
    - ABET student evaluations are not grades
    - how scores for the course and student learning outcome are computed
- An instructor might forget the following
    - to remove all potentially identifying information before uploading a student evaluation
    - to upload all evaluations for a specific course portfolio
- An instructor will fairly evaluate students given consistent student learning outcome rubrics

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Traceability Matrix

Business Requirement	Functional Requirement	Non-Functional Requirement
BR 1	FR 2	
	FR 3	
	FR 4	
BR 2	FR 5	
	FR 7	
	FR 10	
BR 3	FR 1	NFR 2
	FR 3.3.1	NFR 3
		NFR 5
		NFR 7
		NFR 9
		NFR 10
		NFR 11
BR 4	FR 3.1.1	NFR 8
	FR 3.3.1	
	FR 10	

	FR 11	
	FR 14	
BR 5	FR 6	NFR 8
	FR 8	NFR 10
	FR 9	
	FR 10	
	FR 11	
	FR 12	
BR 6	FR 3.3.1	
	FR 3.3.2	
	FR 9.1	
	FR 10	
	FR 11	
	FR 12	
BR 7	FR 1	
	FR 3.3.2	
	FR 4.1	
	FR 6	
	FR 11	
	FR 14	
BR 8		NFR 1
		NFR 2
BR 9	FR 8	NFR 8
	FR 12	NFR 9
	FR 14	NFR 11
BR 10	FR 1	NFR 3

Additional Information

1. Computer Science ABET Student Learning Outcomes
   - SO1. Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
   - SO2. Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program?s discipline.

SO3.   Communicate effectively in a variety of professional contexts.
SO4.   Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
SO5.   Function effectively as a member or leader of a team engaged in activities appropriate to the program?s discipline.
SO6.   Apply computer science theory and software development fundamentals to produce computing-based solutions.

2. Data Structure of course portfolio objects

Course Portfolio
- course name: required, read only
- course number: required, read only
- instructor name: required, read only
- section: required, read only
- semester: required, read only
- year: required, read only
- number of students: required

SLO Artifact
- artifact index: required, read only
- artifact name: required
- is group assignment: default(false)
- number of submissions: default(number of students in class)

Student Evaluation
- evaluation index: required, read only
- student index: required, read only
- evaluation: required
- file: required

3. Format of output zip file

```
/
    course_summary.pdf
    slo_#/
        artifact_#/
            student_eval_#.pdf
            student_eval_#.pdf
        artifact_#/
            student_eval_#.pdf
            student_eval_#.pdf
    slo_#/
```

```
            artifact_#/
                    student_eval_#.pdf
                    student_eval_#.pdf
            artifact_#/
                    student_eval_#.pdf
                    student_eval_#.pdf
```

course_summary.pdf (basically a copy of the course view webpage)
-        course score
-        slo scores
-        artifact scores
-        student evaluations

student_eval_#.pdf
-        student evaluation: represented as a rubric with professor selected evaluation highlighted
-        student submission (formatted as a pdf)