NAS/NCET

System Test Plan

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# Introduction

## Purpose

The purpose of this document is to describe the system test plan for NAS/NCET and will specifically cover the testing of functional and non-functional requirements.

## Scope

NCET is a system that allows students and faculty in the nursing program to replace the current Word document procedure for clinical evaluations, simplifying the flow of academic performance data. The system is currently used by nursing coordinators, leads, instructors and students.

NCET makes use of the Application Management System (AMS) which is the heritage authentication and authorization system that allows users to log in to the system using their Heritage credentials. NCET allows faculty members to have multiple roles at the same time in the system, for example, a coordinator could also have the role of a lead and instructor at the same time.

Within NCET, users can create, read, update courses, read, start, manage, delete, and self-enrol in course runs, manage participants in the course run, and read and update evaluations. More detailed information can be found in the design.

A diagram of a nursing system

Description automatically generated

**Figure 1**: Team 3 nursing application system context diagram

## Target Audience

This document is intended for use as a reference by the development team, and maintenance team to define which tests are to be run and execute from this.

The End User and Operational owner may optionally use this as a reference to understand what black-box testing has been performed as part of entrance criteria to downstream User Acceptance Testing( UAT) in environments where UAT is performed.

## Related documents

The following documents contain information related to the information in this document.

| Document Short Name Reference | Document Title | Version (Optional) |
| --- | --- | --- |
| Test Results | Team3\_K50\_A04\_Test\_Results |  |

Table 1‑1 Related Documents

## Glossary

| Term/Acronym | Description |
| --- | --- |
| NAS | Nursing Application System |
| NCET | Nursing Clinical Evaluation Tool |
| AMS | Application Management System |
| Cstest | The server where the application will be deployed for only testing |
|  |  |

Table 1‑2 Glossary

# Setup and Test environment

The system will be tested on its deployed version which will be hosted *'cstest'*. Each student has their own project and database, but all versions are the same. This setup ensures consistency for testing, making it easier to manage and troubleshoot any issues. So, every student has their own tests.

# Tests

### Functional Tests

These check if the system works the way it's supposed to. Each feature is tested to make sure it does what it should.

|  |  |  |
| --- | --- | --- |
| **Test ID** | **Purpose** | **Expected Result** |
| FN01 | Verify course creation by coordinator | Course is created and available for selection in the system |
| FN02 | Verify assigning instructors to a course | Instructor is successfully assigned to a selected course. |
| FN03 | Verify assigning students to a course. | Students are successfully assigned and viewable in the course list |
| FN04 | Verify the update of evaluation forms by instructors | Evaluation form can be filled out and saved successfully |
| FN05 | Verify PDF generation for evaluation reports | System generates a correct PDF version of the evaluation report |
| FN06 | Verify that course run creation works correctly | System creates a course run for a specific semester |
| FN07 | Verify login functionality using AMS credentials | User successfully logs in with proper AMS roles |
| FN08 | Verify student evaluation visibility to instructors | Instructor can view students' evaluation forms |
| FN09 | Verify user role switching (Coordinator to Instructor) | User can switch between roles seamlessly without losing data |
| FN10 | Verify data retrieval for previously saved evaluations | Previous evaluations are retrievable and displayed correctly |
| FN11 | Verify the deletion of a course by coordinators | Course is successfully deleted and no longer appears in the list |
| FN12 | Verify course data update | Updated course data is saved and reflected across the system. |

**Table 3‑1 Functional Tests**

### Usability Tests

These make sure the system is easy to use. It checks how friendly and clear the system is for users.

|  |  |  |
| --- | --- | --- |
| **Test ID** | **Purpose** | **Expected Result** |
| US01 | Test the navigation bar for ease of access | Users can easily navigate to different sections of the system |
| US02 | Test form readability for students and instructors | Forms are easy to understand and fields are clearly labeled |
| US03 | Test accessibility features (screen readers, keyboard-only) | The system is fully accessible and functions with assistive devices |
| US04 | Test error messaging on invalid form submission | Clear and informative error messages are displayed |
| US05 | Test consistency of layout and design across different pages | Pages maintain consistent design and layout for ease of use |

**Table 3‑2 Usability Tests**

### Business Cycle Tests

These tests see if the system performs tasks correctly based on specific times, like only allowing certain actions during a semester.

|  |  |  |
| --- | --- | --- |
| **Test ID** | **Purpose** | **Expected Result** |
| BC01 | Verify course evaluations are only editable during the active semester | Evaluation forms are locked outside the active semester period |
| BC02 | Verify that reports can only be generated at the end of the semester | PDF generation is allowed only after the semester ends |

**Table 3‑5 Business Cycle Tests**

# Non-Functional Tests

### Scale Tests

These tests see if the system can handle more users or data without slowing down or breaking.

All functional and usability tests are performed under the following scale constraints:

|  |  |  |
| --- | --- | --- |
| **Constraint** | **Constraint Description** | **Size/Amount** |
| 1 | Minimum scale – Will not occur | 1 user |
| 2 | Medium scale – expected | 300 users |
| 3 | Maximum scale – unlikely | 1000 users |

**Table 4‑1 Scale Constraints**

Cross reference to other tests. Which tests are done under the full-scale conditions.

### Performance Tests

These measure how fast and reliable the system is when it's being used heavily, like when lots of people are using it at once.

Performance tests are all run at maximum scale identified in Section 4.1.1

For any metric-based results, the observed metric is captured so that it is understood how close we are to the failure threshold.

|  |  |  |  |
| --- | --- | --- | --- |
| **Test ID** | **Purpose** | **Expected Result** | **Observed Result** |
| 1 | Assess how the system handles many concurrent idle users | System should maintain active sessions properly and log out idle users without performance issues |  |
| 2 | Assess how the system handles many pdf report generations simultaneously | Reports should be downloaded within 2 seconds |  |
| 3 | Assess the system’s behaviour when many users trying to login at the same time | Users should be able to log in within 2 seconds |  |

**Table 4‑1 Performance Criteria**

### Security Tests

These ensure the system is safe from threats. They check if unauthorized users can’t get in and if data is protected.

|  |  |  |
| --- | --- | --- |
| **Test ID** | **Purpose** | **Expected Result** |
| SE01 | Verify login security using AMS credentials | System denies access without valid credentials |
| SE02 | Test role-based access control | Users can only access functions based on their assigned roles |
| SE03 | Test for SQL injection vulnerability | System is resistant to SQL injection attempts |
| SE04 | Verify data encryption for sensitive information | Sensitive data is encrypted when stored |

**Table 4‑2 Security Tests**

### Compatibility Tests

These check if the system works well across different devices, browsers, or environments, like mobile vs. desktop.

|  |  |  |
| --- | --- | --- |
| **Test ID** | **Purpose** | **Expected Result** |
| CO01 | Verify system works across different browsers (Chrome, Firefox, Safari) | System operates smoothly across major browsers |
| CO02 | Verify mobile compatibility on various screen sizes | System adjusts layout and remains functional on mobile devices |

**Table 3‑3 Compatibility Tests**

# Conclusion

### Test Results and Analysis

A total of 31 tests were defined. 20 of them passed, 2 of them failed, 6 were blocked, and 4 were not run. This leaves with a 67% overall pass rate and a 91% pass rate excluding blocked tests. A couple bugs that were not defined previously were added to the bugs tab. Overall, the system test was very successful, and all the core functionality is working. There is just minor bugs or quality of life changes to be made. The biggest issue at the current moment is the inability to delete a course. We have come up with a solution that still respects the nursing departments request to keep courses for legacy and data reasons. If a course is accidentally created, it can be deleted if a course run has not been started for it. This prevents data nuking, but still allows an option to delete in case of an accidental creation.

History

| Version | Status | Date | Author | Reason for changes |
| --- | --- | --- | --- | --- |
| 1.0.0-rc-1 | Closed | 04-29-2024 | Andy, Ayden, Avet, Tyler | These were the initial tests which were done on the system once it was deployed onto csdev |
| 1.0.0-rc-2 | Closed | 04-1-2024 | Andy, Ayden, Avet, Tyler | New tests were added for RC-2 on the application which would be tested on cstest |
|  |  |  |  |  |
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