Project Management Principles and Practice Capstone

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University Term Scheduler Application with Note Taking and Test Scheduling Functionality.

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1. Narrative Charter Statement

a. Project Purpose and Justification

Purpose

This project is currently being initiated is to address numerous problems with the accessibility of term information as experienced by the student body. The current model does not allow the student to access this information while they are mobile. This information is currently only available via a desktop application. This application will only run on either the campus desktops or the student's own desktop or laptop. There is no way a mobile device can reliably access this information. The next underlying problem is that fact it places undue stress on the campus computer infrastructure. The campus computers and servers are forced to process these requests and are not being used for other tasks.

Information that needs to be available is information that is associated with the current, future, and past school terms. The project will also seek to make the application for other information as well. It provides a central access point for the student to access notes about a course as well as provide notifications about upcoming assignments.

Justification

This project will address the problems mentioned in the previous section and provide the student with a means to stay mobile and provide the following benefits:

- Provide a mobile application that students can use without the need to log into their personal computer or the campus computers to view their schedule.

- Provide a simple and intuitive way for the university's students to create a university term to view schedule.

- Provide the university students a way to add notes for their courses in one application.

- Provide a way to set test notifications and other assessments based on the desired due dates.

- Reduce the need for the students to use campus facilities and afford the students the ability to take notes using their mobile application as opposed to using their laptop or other device.

- Reduce the demand for on-campus computer resources thereby reducing the need for on-campus resources.

- Decrease the demand for processing resources that would normally be handled by the university servers.

While the bullet points above are the most tangible return in pursuing the project. There are other non-tangible benefits as well. The student body will be more in control of the information and will be afforded a new freedom to create information around their term. This should lead to a happier and more productive student body. This is the justification for pursuing this project as it will make the university and its student body more aware of.

b. Measurable Project Objectives and Related Success Criteria

No.	Project Objectives	Success Criteria
1	Cost of the application development should be less than $10,000	The project's cost is at $30,000 or below
2	Application must be available to the students by the beginning of the Fall 2022 semester	The application is available by the Fall 2022 semester
3	Reduce the dependence on campus computing facilities.	There is at least a 30% reduction in the use of the campus's computer labs
4	Reduce the workload on the university's servers	Campus server workload is reduced by 30%
5	Application has been successfully adopted by the campus's student body.	Application has been adopted or downloaded by at least 90% of the current full time student body and by at least 50% of the part time student body
6	Application is easy to use and navigate	Volume of calls to the campus's help desk does not rise by more 3%.

7	Training on the application is minimal as the application should be intuitive to use.	Volume of calls asking for training on how to sue this application do not increase call volume by 1% over the current average daily call count.

c. High-level Requirements

- Students will be able to create school terms in an easy and intuitive manner.

- Students will be able to add classes to the terms quickly.

- Servers will be used less than the current model of desktop only applications.

- Students will be able to be more mobile and more informed about their daily schedule.

- Application will provide a good return on investment by reducing server and network utilization over the current model.

- Will provide a better student experience when term information is desired.

- Costs in terms of servicing requests will be reduced since most of the information will be already stored locally on the student's device.

d. Assumptions and Constraints

- The application will be completed by the start of the Fall 2022 semester.

- The project will cost no more than $35,000.

- All the resources will be available in-house.   No outside resources will be required to complete the project.

- All subject matter experts will be available when their expertise is needed.

- The University administration will 100% support the endeavor.

- Sponsors will have the authority to remove any hindrances or roadblocks in getting the necessary resources to complete the project.

- All server hardware and other hardware will be available and can handle the new work model.

- Servers and other hardware are in good working order and will not need to be upgraded to handle the new work model.

- The current IT staff have the required skills to implement all aspects of the application. This includes both front end and back design and implementation.

- The application must complete at least project milestone a month for the duration of the project's timeline.

- University staff may need to use their time on other projects and tasks that are required by the day-to-day operation of the school. Staff may not be able to provide their skills and resources at the appropriate time.

e. High-level Risks

- The project is highly dependent on skills set that is currently available with the current University staff.

- Staff knowledge in mobile applications may not be adequate to get the application completed during the timeframe in question.

- The application may need multiple versions for both the user interface and the back-end business logic to get a functioning application to function to the requirements.

- Training of users may be more intensive if the application is not as intuitive as once believed. This may require more time to develop and may lead to extended development time.

- The loads on the current network and servers will need to be monitored to make sure that the traffics is being adequately handled.

- Failure to adhere to any personal information requirements if the laws are not strictly adhered to.

f. Summary of Milestone Schedule

- Complete a survey of the student body on what they would like to have from the application.

- Complete a survey on the possible layout of the application.

- Complete a review the survey of the functionality and create a "wants" and needs list for the application. Making note of the most requested features.

- Complete a mock design of the user interface.

- Complete the requested and needed functionality of the application based on the student needs.

- Complete a test run with the mock user interface to get user feedback about the interface ease-of-use.

- Complete a test on the all the needed functionality of the application.

- Complete an integration test unifying the user interface (front-end) with the functionality of the application (back-end business logic).

- Complete training of help desk users on the functions of the application.

- Complete a list of the wants that were not incorporated into the current version of the of the application. To be used for future upgrades and functionality improvements.

- Complete a lesson learned for future improvements and collect all documentation of the project, wrap up and release the application.

- Complete application launch to the student body.

g. Summary Budget

- The overall budget for the design and build of this application will be $35,000.

2. Work Breakdown Structure
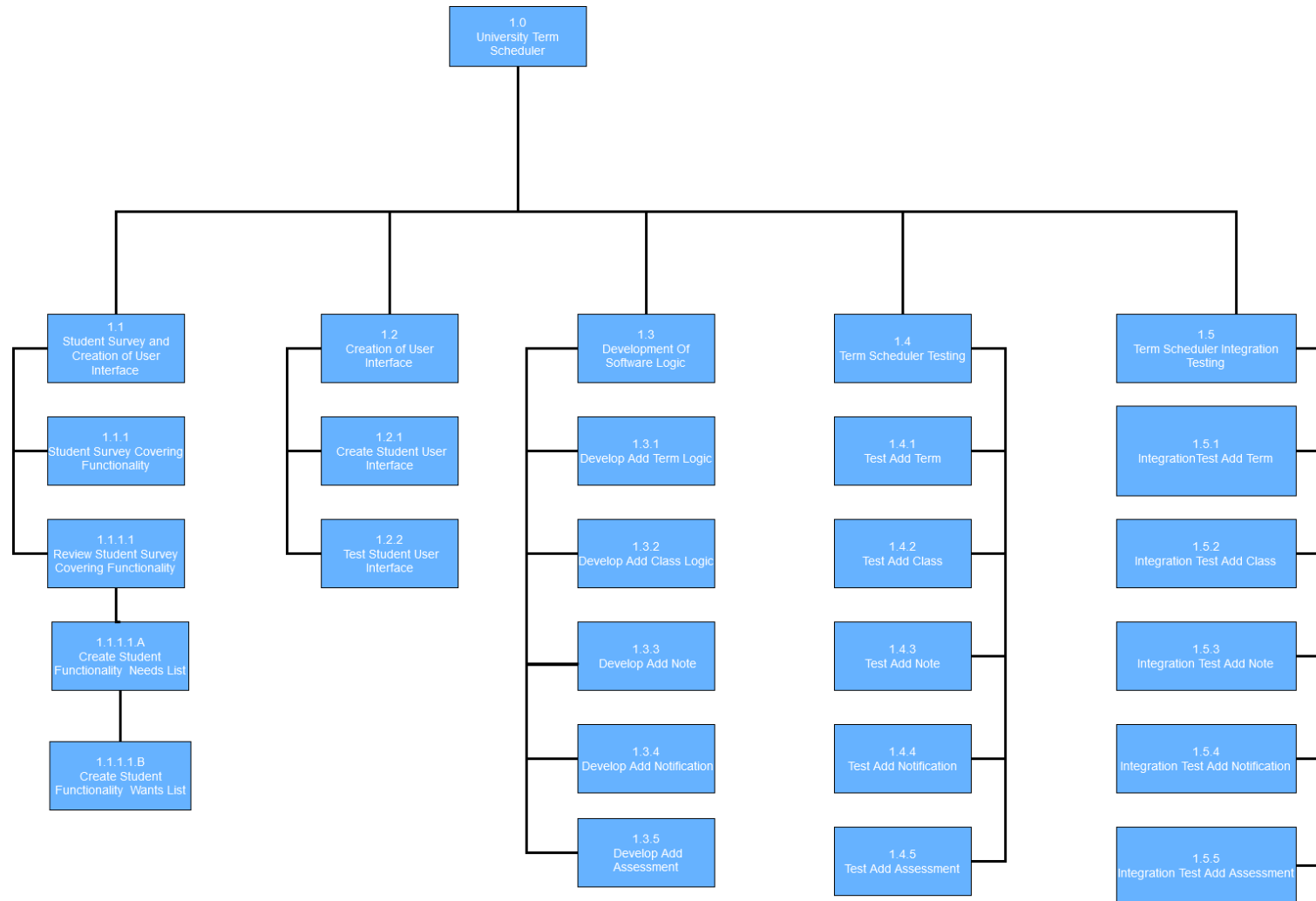
3. Sequence Project Activities

WBS ID	Activity/Task Name	Predecessor	Duration (Day)
1.1	**Student Survey and Creation of User Interface**		
1.1.1	Student Survey Covering Functionality	None	1
1.1.1.1	Review Survey Covering Functionality	1.1.1	1
1.1.1.1.A	Create Student Functionality Need List	1.1.1.1	1
1.1.1.1.B	Create Student Functionality Wants List	1.1.1.1	1
1.2	**Create Student User Interface**		
1.2.1	Create Student User Interface	1.1.1.1A	3
1.2.2	Test Student User Interface	1.2.1	2
1.3	**Development of Software Logic**		
1.3.1	Develop Add Term Logic	1.1.1.1.A	2
1.3.2	Develop Add Class Logic	1.1.1.1.A	2
1.3.3	Develop Add Note Logic	1.1.1.1.A	2
1.3.4	Develop Add Notification Logic	1.1.1.1.A	2
1.3.5	Develop Add Assessment Logic	1.1.1.1.A	2
1.4	**Term Scheduler Testing**		
1.4.1	Test Add Term Logic	1.3.1	1
1.4.2	Test Add Class Logic	1.3.2	1
1.4.3	Test Add Note Logic	1.3.3	1
1.4.4	Test Add Notification Logic	1.3.4	1
1.4.5	Test Add Assessment Logic	1.3.5	1

1.5	Term Scheduler Integration Testing		
1.5.1	Integration Test Add Term	1.4.1	1
1.5.2	Integration Test Add Class	1.4.2,1.5.1	1
1.5.3	Integration Test Add Note	1.4.3,1.5.2	1
1.5.4	Integration Test Add Notification	1.4.4,1.5.3	1
1.5.5	Integration Test Add Assessment Logic	1.4.51.5.4	1
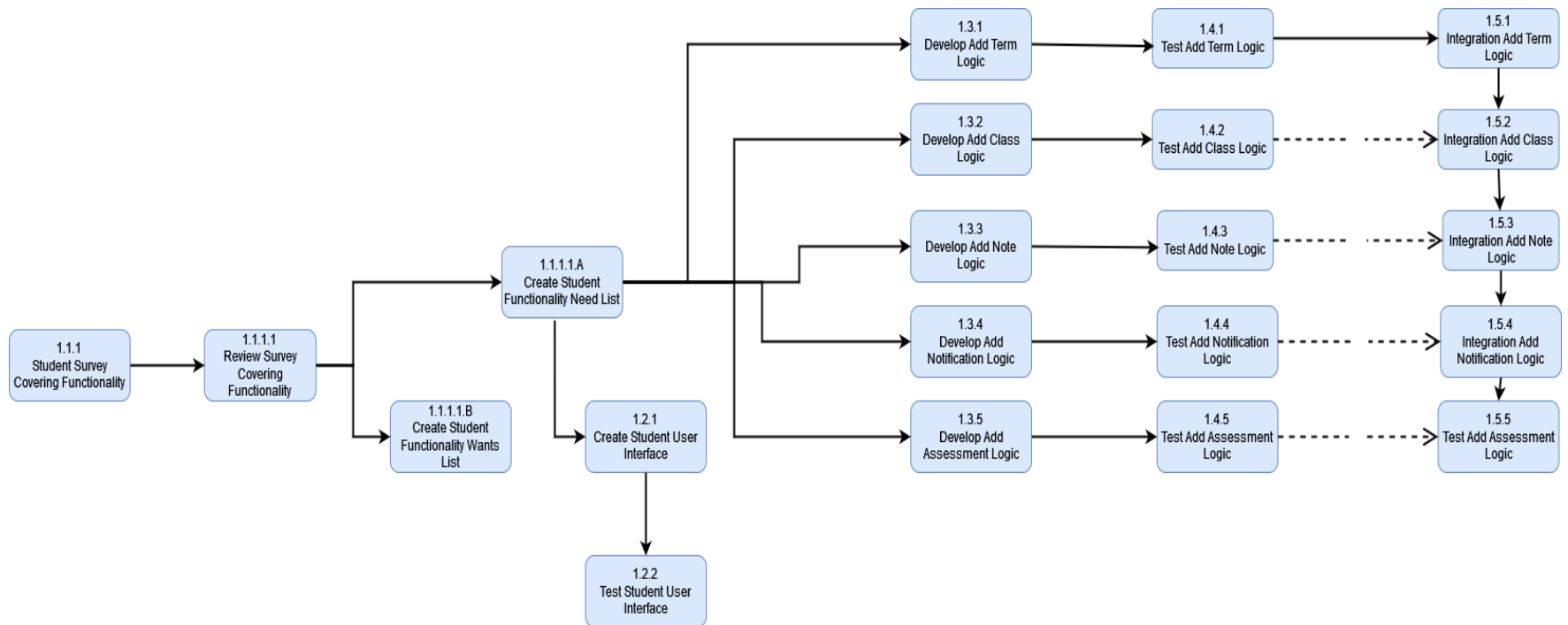
Flowchart of Project Activities

4. Project Schedule

WBS ID	Activity/Task Name	Predecessor	Duration (Day)	Start Date	Finish Date	Resources
1.1	**Student Survey and Creation of User Interface**		**4**	**1-Jun-2022**	**6-Jun-2022**	**SP, PM, UX, SD, DB, SV**
1.1.1	Student Survey Covering Functionality	None	1	1-Jun-2022	1-Jun-2022	PM, SV
1.1.1.1	Review Survey Covering Functionality	1.1.1	1	2-Jun-2022	2-Jun-2022	SP, PM, SV
1.1.1.1.A	Create Student Functionality Need List	1.1.1.1	1	3-Jun-2022	3-Jun-2022	SP, PM, SV
1.1.1.1.B	Create Student Functionality Wants List	1.1.1.1	1	6-Jun-2022	6-Jun-2022	SP, PM, SV
1.2	**Create Student User Interface**		**5**	**7-Jun-2022**	**13-Jun-2022**	**PM, UX, SD**
1.2.1	Create Student User Interface	1.1.1.1A	3	7-Jun-2022	9-Jun-2022	PM, UX, SD
1.2.2	Test Student User Interface	1.2.1	2	10-Jun-2022	13-Jun-2022	SD
1.3	**Development of Software Logic**		**10**	**14-Jun-2022**	**28-Jun-2022**	**PM, SD, DB**
1.3.1	Develop Add Term Logic	1.1.1.1.A	2	14-Jun-2022	15-Jun-2022	SD, DB
1.3.2	Develop Add Class Logic	1.1.1.1.A	2	16-Jun-2022	17-Jun-2022	SD, DB
1.3.3	Develop Add Note Logic	1.1.1.1.A	2	21-Jun-2022	22-Jun-2022	SD, DB
1.3.4	Develop Add Notification Logic	1.1.1.1.A	2	23-Jun-2022	24-Jun-2022	SD, DB
1.3.5	Develop Add Assessment Logic	1.1.1.1.A	2	27-Jun-2022	28-Jun-2022	SD, DB
1.4	**Term Scheduler Testing**		**5**	**29-Jun-2022**	**7-Jul-2022**	SD, ST
1.4.1	Test Add Term Logic	1.3.1	1	29-Jun-2022	29-Jun-2022	SD, ST
1.4.2	Test Add Class Logic	1.3.2	1	1-Jul-2022	1-Jul-2022	SD, ST
1.4.3	Test Add Note Logic	1.3.3	1	5-Jul-2022	5-Jul-2022	SD, ST
1.4.4	Test Add Notification Logic	1.3.4	1	6-Jul-2022	6-Jul-2022	SD, ST
1.4.5	Test Add Assessment Logic	1.3.5	1	7-Jul-2022	7-Jul-2022	SD, ST
1.5	**Term Scheduler Integration Testing**		**5**	**8-Jul-2022**	**14-Jul-2022**	**PM, SD, ST**
1.5.1	Integration Test Add Term	1.4.1	1	8-Jul-2022	8-Jul-2022	SD, ST
1.5.2	Integration Test Add Class	1.4.2,1.5.1	1	11-Jul-2022	11-Jul-2022	SD, ST

1.5.3	Integration Test Add Note	1.4.3,1.5.2	1	12-Jul-2022	12-Jul-2022	SD, ST
1.5.4	Integration Test Add Notification	1.4.4,1.5.3	1	13-Jul-2022	13-Jul-2022	SD, ST
1.5.5	Integration Test Add Assessment Logic	1.4.51.5.4	1	14-Jul-2022	14-Jul-2022	SD, ST

Legend:

SP = Sponsor   PM = Project manager   SD = Software developer   ST = Software tester

SV = Survey processor   UX = User experience designer   DB = Database administrator

Note: The dates above take into account United States holidays and non-working weekends.

5. Project Budget

Weekly budget for the Projects:

Description of the expense category:

Labor cost – labor that is used for tasks that are not produced by specific members of the team. For example, additional IT support or other technical help.

Survey cost – Cost to create and administer the survey to gather the features and requirements for the application. This cost will only be incurred during the first day of the application project.

Design cost – The cost of designing the experience of the application. This includes the expenses incurred using a UX/UI designer.

Development cost – The cost us the software developers and the testers that were used to create and test the application as well as any database operations.

Training cost – Cost to train the help desk staff, administration, and student body on the use of the application. This includes developing the online instructional material.

Additional cost – Any extra hardware or human resources that are needed to create the application. This includes hardware updates to the server (*if required*). The human resources are billed on as-needed basis. *These resources are not long term project participants*.

Week #	Labor Cost	Survey Cost	Design Cost	Development Cost	Training Cost	Additional Costs	Total Cost
Week 1	$500	$600	$1500	$0	$0	$2500	**$5100**
Week 2	$500	$0	$1400	$2600	$0	$2800	**$7300**
Week 3	$500	$0	$0	$3600	$0	$600	**$4700**
Week 4	$500	$0	$0	$5440	$0	$100	**$6040**
Week 5	$350	$0	$0	$4200	$0	$500	**$5050**
Week 6	$0	$0	$0	$2400	$1500	$500	**$4400**
Total:	**$2350**	**$600**	**$2900**	**18240**	**$1500**	**$7000**	**$32590**

Weeks are broken down in the following manner:

- Week 1 runs from 1-Jun-2022 to 6-Jun-2022

- Week 2 runs from 7-Jun-2022 to 14-Jun-2022

- Week 3 runs from 15-Jun-2022 to 22-Jun-2022

- Week 4 runs from 23-Jun-2022 to 29-Jun-2022

- Week 5 runs from 1-Jul-2022 to 7-Jul-2022

- Week 6 runs from 8-Jul-2022 to 12-Jul-2022

Estimated Labor Cost Based on Hourly Rates Per Participant:

- *Rates in chart are per hour*.

- *Note: Training will be billed to the Miscellaneous category in the 6th week of the project*.

Week #	Hours	Sponsor ($35)	Survey Processor ($15)	Project Manager ($55)	User Experience Designer ($35)	Software Developer ($65)	Database Administrator ($55)	Software Tester ($55)	Miscellaneous (Assorted rates billed by need)	Total Cost
Week 1	40	$1400	$600	$2200	$0	$0	$0	$0	$2000	**$6200**
Week 2	40	$0	$50	$2200	$1400	$2600	$550[1]	$0	$0	**$6800**
Week 3	40	$0	$0	$110[2]	$0	$2600	$550[1]	$0	$1000	**$4260**
Week 4	40	$0	$0	$110[2]	$0	$2080[3]	$550[1]	$2200	$500	**$5440**
Week 5	40	$0	$0	$110[2]	$0	$1300[4]	$0	$2200	$500	**$4610**
Week 6	40	$0	$0	$110[2]	$0	$1300[4]	$0	$1100[5]	$1500	**$4010**
Total:	**240**	**$1400**	**$650**	**$4840**	**$1400**	**$10380**	**$1650**	**$5500**	**$5500**	**$29520**

[1] Database Administer will only work 10 billable hours on the project during this week.

[2] Project Manager will work only two hours per week from weeks 2 through 6. The PM will be available on as-needed basis.

[3] The software developer will only work 32 hours during week 4.

[4] The software developer will only work 20 hours during week 5 and 6.

[5] Software Tester software developer will only work 20 hours during week 5.

6. Responsibility Assignment Matrix (RAM)

Legend:

R = Responsible   **A=Accountable**   **C=Consult**   **I=Inform**

Work Package	Sponsor	Survey Processor	Project Manager	User Experience Designer	SD Software Developer	Database Administrator	Software tester
1.1 Student Survey and Creation of User Interface	A	I	R	I	I	I	I
1.1.1 Student Survey Covering Functionality	A	R	C	C	I	I	I
1.1.1.1Review Survey Covering Functionality	A	C	R	C	I	I	I
1.1.1.1.A Create Student Functionality Need List	A	I	R	C	C	I	I
1.1.1.1.B Create Student Functionality Wants List	A	I	R	C	C	I	I
1.2 Create Student User Interface	I	I	A	R	C	I	I
1.2.1 Create Student User Interface	I	I	A	R	I	I	I
1.2.2 Test Student User Interface	I	I	A	R	C	I	I
1.3 Development of Software	I	I	A	I	R	C	C

Logic

1.3.1 Develop Add Term Logic	I	I	A	I	R	C	C
1.3.2 Develop Add Class Logic	I	I	A	I	R	C	C
1.3.3 Develop Add Note Logic	I	I	A	I	R	C	C
1.3.4 Develop Add Notification Logic	I	I	A	I	R	C	C
1.3.5 Develop Add Assessment Logic	I	I	A	I	R	C	C
1.4 Term Scheduler Testing	I	I	A	I	C	I	R
1.4.1 Test Add Term Logic	I	I	A	I	C	I	R
1.4.2 Test Add Class Logic	I	I	A	I	C	I	R
1.4.3 Test Add Note Logic	I	I	A	I	C	I	R
1.4.4 Test Add Notification Logic	I	I	A	I	C	I	R
1.4.5 Test Add Assessment Logic	I	I	A	I	C	I	R
1.5 Term Scheduler Integration Testing							
1.5.1 Integration Test Add Term	I	I	A	I	C	I	R
1.5.2 Integration Test Add Class	I	I	A	I	C	I	R
1.5.3 Integration Test Add Note	I	I	A	I	C	I	R
1.5.4 Integration Test Add Notification	I	I	A	I	C	I	R
1.5.5 Integration Test Add Assessment Logic	I	I	A	I	C	I	R

7. Project Risks Their Severity and Their Associated Responses

No.	Risk	Mitigation	Contingency	Risk Impact	Risk Possibility	Priority of Risk
1	Application development runs ahead of schedule	(1) Check to make sure that the application is meeting required feature. (2) Document the reasons for why the project is ahead of schedule	(1) Update any requirements that may not be up to required quality. (2) Archive documentation and share with the team members to referenced for future application development projects.	Low	Low	Low
2	Team member leaves the company	(1) Some staff members may have the ability to fill in for a short time. (2) Try to document the application that has been completed and what needs to be completed by the employee that left.	(1) Prioritize employee with similar skill set from within the company to fill gap. (2) Prioritize the hiring of a candidate with similar skill set to the employee that left	High	Low	High
3	Team member becomes ill	(1) Some staff members may have the ability to fill in for a short time. (2) Consult ill employee on their progress and determine if they will be behind and decide based on the length of absence.	(1) If the employee is only going to be out a short time prioritize an in-house replace for the project. (2) If the employees going to be unavailable for extended hire a short-term contract employee to fill in while the employee is ill.	Medium	Medium	Medium
4	Missed functionality requirement	(1) Review the functionality and create the desired logic implementation	(1) If the requirement is not a high priority implement in a future release or upgrade. (2) If the requirement is high force a re-work of the logic as well as the user interfaces.	Medium	Low	Medium

5	Funding for application project is taken away	(1) Make sure that all financing is in place before the project is kicked-off	(1) Make inquiries about securing the founding through other sources.	High	Low	High
6	Insufficient hardware resources	(1) Ensure that the project has the right hardware resources to successfully complete the project	(1) Survey the available hardware and purchase the appropriate hardware that is required to complete the project.	High	Low	High
7	Insufficient technical skills in the in-house staff to embark on the project	(1) Ensure that the project has the right technical resources to successfully complete the project beforehand	(1) Educate the in-house team on any new technology that may be employed in the development of the application (2) Hire a technology to train the appropriate staff on the new technology.	High	Low	High
8	Project running behind Schedule	(1) Monitor the project make sure that performance and progress metrics are being met. (2) Get assistance from in-house staff this includes staff not currently assigned to the project.	(1) Hire additional outside contractors to complete the application.	High	Medium	High