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Web-Based Research Routing System for the CCS Department at Santa Rita College

A Capstone Project

Presented to the

Faculty of the College of Computer Studies

Santa Rita College of Pampanga

In Partial Fulfillment

of the Requirements for the Degree

BACHELOR OF SCIENCE IN INFORMATION SYSTEM

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**APPROVAL SHEET**

This capstone project entitled “Web-Based Research Routing System for the CCS Department at Santa Rita College” proposed and submitted by Jhon Louie B. Dizon, John Carl D. Dizon, and Clarence B. Dula in partial fulfillment of the requirements for the degree BACHELOR OF SCIENCE IN INFORMATION SYSTEM, has been examined and found in order and is hereby recommended for acceptance and approval for ORAL EXAMINATION.

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Accepted and approved in partial fulfillment of the requirements for the degree  
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## **CHAPTER I**

### **INTRODUCTION**

#### **BACKGROUND OF THE STUDY**

Over the past few years, technology have become important in universities and colleges and help to improve the research and student projects organized and accessed easily. The use of online tools for management of research and project submissions is on the rise in universities and colleges globally. Colleges and universities worldwide are increasingly turning to web-based tools to handle research and project submissions. This transition into a larger trend toward digital change in education, aiming to spread knowledge and encouraging collaboration between students and teachers.

At Santa Rita College, the CCS Department still uses traditional methods for handling research. The students are required to submit hard copies of the documents for the faculty to review, and scheduling a project defense is a time-consuming process. This traditional method has caused several problems, which include schedule conflict, difficulties in communication between students and faculty, and slow feedback on documents. Without a modern system, time and effort are lost on tasks that could have been better spent on more meaningful academic activities.

This study proposes as a solution to these issues by creating a web-based research routing system for the CCS Department. The objective of this system is to modernize the submission by an online process, replacing a structured digital workflow for paper-based methods. Students will submit project working titles and required documents online, covering both title defense and final defense stages. In a centralized system, faculty

members will receive and review submissions, accept or decline them and arrange for the defense presentations. The system will have a user-friendly interface that will help improve communication between students and faculty, reduce administrative task, and make the evaluation of research projects more efficient.

Through this system, the CCS Department hopes to speed up how research documents are submitted and evaluated, showing its commitment to embracing innovations and enhancing education. The department is trying to make these processes easier, shorten the timeline and make feedback to teachers and students more timely and transparent. This will help to make the process efficient and allow for a more organized workflow, maximizing the benefits for the academic environment regarding the education of students.

## **STATEMENT OF THE PROBLEM**

This study aims to address the following problems:

1. How can a web-based research routing system be developed for CCS department at Santa Rita College?
2. How can the proposed system speed up the process for students to submit project titles, upload required documents, and schedule title and final defenses online?
3. In what ways can a user friendly and effective system enhance how faculty handle reviewing, approving, or rejecting project submissions and keep defense schedules running smoothly?

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4. How to evaluate the system based on the ISO 25010 standards with the following criteria?
    - a. Functional Suitability
    - b. Performance Efficiency
    - c. Compatibility
    - d. Interaction Capability
    - e. Reliability
    - f. Security
    - g. Maintainability
    - h. Flexibility
    - i. Safety

### **OBJECTIVES OF THE STUDY**

This study aims to achieve the following objectives:

1. To develop a web-based research routing system for the CCS Department at Santa Rita College.
2. To develop a system that can speed up the process for students to submit working titles, upload documents for title and final defense, and schedule defense presentations through an online system.

3. To develop a system that can improve how faculty manage reviewing, approving, or turning down submissions and arranging defense schedules with a user-friendly and centralized system.
4. To evaluate the system based on ISO 25010 with the following criteria:
  - a. Functional Suitability
  - b. Performance Efficiency
  - c. Compatibility
  - d. Interaction Capability
  - e. Reliability
  - f. Security
  - g. Maintainability
  - h. Flexibility
  - i. Safety

## SIGNIFICANCE OF THE STUDY

This study is significant for several reasons:

- **Santa Rita College:** This system contributes to the college's position as a forward school that uses technology to improve administrative procedures and enhance the educational experience.
- **CCS Department:** The web-based research routing system will enhance the handling of the process of managing project working titles, research project

submissions, and reviews. It will help the department reduce the amount of time lost due to delays and manage the projects more effectively.

- **Faculty:** The web-based research routing system will reduce the task of the faculty by providing the tools online to review, approve, or reject project submissions. They can also manage defense schedules more effectively; this will allow them to provide more time to guide students and provide feedback.
- **Students:** The web-based research routing system will make it easy for students that they can submit their project working titles and other necessary documents through the system. Additionally, it offers an organized method to project progress updates, which can help students save time and avoid the inconveniences associated with traditional methods.
- **Future Researchers:** This study will be an instrument for future research into web-based research routing systems, offering significant ideas on their design, features, and benefits.

## SCOPE AND DELIMITATIONS

This study is about developing a web-based research routing system for the CCS Department at Santa Rita College. The system is to facilitate smoother research project submission, evaluation and scheduling. Students will be able to submit project titles and research papers online, and teachers will have the resources they need to assess submissions, decide whether to accept or reject them, and schedule project defenses. Both desktop and mobile web browsers will be able to access the system except for the administrator, it will only be accessible through desktop web browser, and it will have an easy-to-use interface and a secure login.

This study is exclusive for the research projects of the CCS Department. It will not provide cooperation with other institutional systems including grading systems or student information databases. The system cannot be used in offline settings and needs an internet connection to operate. Other advanced tools do not include data analytics, offline access, or reporting, as they prioritize the immediate need for submission and approval procedures.

## DEFINITION OF TERMS

1. **CCS Department:** Refers to the College of Computer Studies (CCS) Department of Santa Rita College that will handle the managing of student research projects using the research routing system which will control the submission, review and scheduling processes.
2. **Routing System:** A procedure within the system that manages the flow of documents associated with a student's research project within the CCS department, to include submission, evaluation by faculty, approval/rejection, and scheduling of defense.
3. **Faculty:** Refers to the teachers at the CCS Department of Santa Rita College.
4. **Research:** Refers to submitted capstone projects from students to show their acquired knowledge and skills from a particular area of study.
5. **User-Friendly Interface:** Represents the system's graphical user interface (GUI) which is designed to be easy to use. It allows students, faculty, and other staff members to submit and review research documents and manage project defenses with ease.
6. **Centralized System:** A single system that provides authorized users easy access and efficient management of all research proposals and documents.



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7. **Responsive Design:** The structure of the design that allows users to access the system effortlessly. Users of PCs, laptops, and smartphones are all able to comfortably access the system.
  8. **Login Authentication:** Before enabling access, a built-in security process checks user identities. Only approved faculty, students, and staff members can log in, submit, or review capstone projects.

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## **CHAPTER II**

### **REVIEW OF RELATED LITERATURE AND STUDIES**

#### **INTRODUCTION**

In this chapter, we summarize existing studies and literature on digital systems used to manage capstone projects, such as online systems for the submission of projects, evaluation of projects, and scheduling of project defense. It describes their features and their strengths and potential applications in the web-based research routing system including examples of similar systems developed by other institutions.

#### **RELEVANCE OF THE RELATED LITERATURES AND STUDIES**

This chapter presents studies that directly emphasize the efficiency and usability of web-based research routing systems, as well as the overall impact they have on different academic institutions. These systems simplify research workflows, facilitate collaboration, and improve accessibility to academic resources.

#### **Existing Web-Based Research Routing Systems**

A web-based platform, created by Gabor (2024), was designed to facilitate formative assessment of capstone projects, with a focus on optimizing feedback loops between students and supervisors. The research emphasizes the need for feedback loops at regular intervals, which promote student learning and about supervisors improving their evaluation processes. With the gradual introduction of agile methodologies, this system enhances capstone project outcomes and ultimately better prepares students for effective integration in the workplace.

Sankar et al. (2023) developed a Student Management System as a capstone project, hoping to improve on the organizational aspects of student data, submission tracking, and communication between faculty and students. They explain the way their findings suggest that web-based systems make administrative tasks easier to perform, can minimize human error regarding record keeping, and enhance access to academic records. This indicates a need for the Research Routing System, which aims to electronic the process of capstone project submission, review and scheduling under the CCS Department at Santa Rita College. These systems help in increasing transparency, reducing manual effort, and facilitating a better collaboration between students and faculty by incorporating methods like structured workflows for data management and real-time processing of data.

### **Capstone and Thesis Management Platforms**

Maulana et al. (2022) developed a web-based thesis management information system that focused on improving the efficiency and quality of the thesis guidance process and document management. Hence it helps you to communicate and work with your lecturer and students, no matter where you are. In this way, we will experience an experiment without bodily returning to our thesis. The thesis process will help your pitfall of a thesis, both effective and time sensitive.

Chio et al. (2022) built a web-based university thesis management portal called "THESISIT" with the aim of helping students through the thesis-writing process — even including an automated defense scheduler. One important highlight is that we developed a genetic algorithm for automatic scheduling of oral defense, which saves effort and time.

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Usability testing showed that 94% of users considered the system appropriate and recognizable, and overall functionality index was rated with 84%.

Almeida et al. (2022) proposed a multi-objective mixed-integer linear programming model for optimally scheduling a thesis defense. They showcased the ability of the model to handle sophisticated scheduling problems after simulating realistic factors like availability constraints for committee members and rooms in their computational experiments.

Alvarez et al. (2022) conducted a Capstone Project Evaluation System to enhance the thesis and capstone project evaluation process in University of Perpetual Help System Laguna. Previously, the assessment methods were merely manual, and paper based and proved to be inefficient and time taking. To tackle this issue, the authors adopted a web-based assessment platform and make use of Technology Acceptance Model (TAM) to evaluate its trustworthiness and usability. Their results demonstrated that the system could stand as a suitable substitution for manual assessment, enhancing the efficiency of the methodology and facilitating the workflow of the assessment of projects.

The Project Hub platform creates a digital environment where students and faculty can work together to follow a project, share feedback and facilitate evaluation. Manual project tracking mechanisms have proven inefficient, time-consuming, and often opaque, leading to issues with both productivity and accountability in the project. Using automated tracking and communication tools, Project Hub encourages a more interactive and structured workflow, allowing both students and faculty to monitor project milestones and outcomes (Patil et al., 2023).

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### **Cloud Computing in Research Routing Systems**

Qasem et al. (2020), cloud computing is a significant enabler that transforms higher education institutions. Their analysis provided a multi-dimensional perspective on cloud adoption in academia, identifying infrastructure, technology readiness, and institutional support as key determinants. The results indicate that the scalability, cost-effectiveness and access to resources - features of cloud computing - are critical for enhancing research routing systems.

A model was presented by Grover and Nandal (2023) that combines Edu-Cloud computing along with machine learning for the purpose of improving academic activities. This type of cloud computing technique allows access to academic resources anytime, anywhere, as well as enhanced storage, management and retrieval of related research.

### **Security and User Engagement in Web-Based Systems**

The rise of web-based research systems in academic institutions is associated with a host of security and privacy concerns. Arpaci et al. (2023) made a study on the impact of national culture on the adoption of cloud computing in higher education, particularly underlining data security and privacy issues. It highlights a noticeable impact of data security practices, varying by culture, on the implementation of cloud-based systems: strong encryption and authentication western methods of handling sensitive application capabilities.

The need for user-friendly interfaces and adequate training to guarantee that faculty and students use web-based research systems has been pointed out elsewhere. System

adoption is highly dependent on intuitive navigation, structured workflows, and ongoing user support (Mikelsone & Segers, 2022).

Student research evaluation is a human-based task that can age or trigger a bottleneck, the introduction of online capstone manuscript evaluation systems can greatly improve evaluation accuracy and efficiency. Time-consuming manual evaluation processes often wastepaper and create communication and logistical inefficiencies, preventing timely feedback and progression of projects. The DOI process also enables students to receive structured feedback as well as track its submission and evaluation in real time, whilst enabling faculty members to systematically track revisions and approvals. Moreover, such a system mitigates the environmental effect of printing numerous copies of research manuscripts, thereby adopting a greener philosophy for academic evaluations (Alipio et al., 2022).

Ibrahim et al. (2022) describe an experience with the implementation of an online management system that aims to facilitate and improve the quality of learning outcomes assessment. Traditional assessment methods, including paper-based tests, manual grading, and siloed data, can be cumbersome and often lead to inefficiencies in the evaluation process. Being an online system, allows a more formal and a transparent approach to the evaluation process, resulting in instant feedback and data facilitated decision-making. Another key advantage of implementing an electronic assessment system is that it maintains continuity in academic assessments and evaluations, despite cases of disruptive events like the COVID-19 pandemic, by providing a centralized accessible and easily utilizable platform for both students and faculty.

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### **Scalability and Future Trends in Research Routing Systems**

Qashou et al. (2025b) explored this mobile cloud computing model further, recommending it for research routing in higher education. They found that mobile cloud-based systems improve flexibility and foster collaboration among students, faculty members, and external partners. Finally, the accessibility and synchronization abilities given by mobile cloud computing enhance research routing, enabling organization and accountability facilitation and assisting in ensuring compliance with the academic standards imposed.

As discussed in an article by Verity Platform (2025), today's RMS platforms provide a centralized interface for faculty, students, and administrators to engage seamlessly. These systems also allow for easy upload of documents, capable of handling proof of approval workflows and ensuring that all activities associated with research are tracked and archived. Verity Platform emphasized that RMS has the potential to drastically decrease administrative burden through integration and automation of customary references and activities like though not limited to scheduling, data collection, and reporting which provide increase efficiency in research management.

This literature review points to the necessity of web-based research routing systems in academic settings. Such systems enhance collaboration, accessibility, and efficiency by streamlining submission, review, and approval processes. But they also help manage research data better and allow students, faculty and administrators to communicate more effectively. This will help inform best practices to follow to create a high performing research management system to support further research culture and

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higher performance of CCS Department within Santa Rita College, contributing to academic growth.



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