

INDUSTRIAL TRAINING E-LOGBOOK SYSTEM

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ABSTRACT

Industrial Training is the process of undertaking an internship at a company related to one's field of study. There are thousands of university students undergoing internship every semester. As there are a large number of records to manage process, Industrial Training e-Logbook System (ITeLS) is developed to ease the workload. The development process of ITeLS is partitioned into phases such as planning, analysis, design, implementation and testing, based on the Rapid Application Development (RAD) methodology. By implementing ITeLS, the internship records were able to be dynamically updated and accessed by all parties at any time. For future enhancements, a mobile version may be developed for increased mobility and ease of access.

ABSTRAK

Latihan Industri merupakan proses menjalani latihan di sebuah syarikat yang berkaitan dengan bidang pengajian. Setiap semester, beribu-ribu mahasiswa akan menjalani latihan industri. Oleh sebab terdapat bilangan rekod yang banyak untuk diproses, Industrial Training e-Logbook System (ITeLS) telah dibangunkan untuk mengurangkan beban kerja. Pembangunan ITeLS dibahagikan kepada beberapa fasa, iaitu perancangan, analisis, rekacipta, implementasi dan pengesahan, berdasarkan metodologi Rapid Application Development (RAD). Dengan melaksanakan ITeLS, rekod latihan industri dapat dikemaskinikan secara dinamik dan diakses oleh semua parti pada bila-bila masa. Untuk pembaharuan masa hadapan, versi mobil boleh dibangunkan untuk meningkatkan mobiliti dan kemudahan akses.

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CHAPTER 1

INTRODUCTION

This chapter contains a brief description of the Industrial Training e-Logbook System (ITeLS) which comprises of five sections. The first section describes the background of the project. The second section includes a statement of the problem behind the conception of ITeLS. The third section contains the objectives of the project while the fourth section outlines the project scope. Finally, the fifth section lists the thesis organisation.

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1.1 Project Background

Industrial Training is the process of undergoing an internship or apprenticeship at a company related to one's field of study. Davies (1990) states that internship is a type of first-hand learning where students take the opportunity to apply learned theories from schools in the real world situation, and it provides an opportunity for students to integrate and unite thinking and action[1].

The purpose of an internship is to provide an opportunity to close the yawning gap between college-learned theory and practical reality [2]. Besides that, it enables the industry to carefully evaluate a prospective employee. At the same time, these internships provide the student an opportunity to wisely consider a prospective employer [3]. Undergraduates of Universiti Malaysia Pahang are required to complete their Industrial Training as a prerequisite to graduating. The positive impact of an internship on a new IT graduate's employability and starting salary and the resulting growth in popularity of internships are well documented [4]. Therefore, by making Industrial Training compulsory, Universiti Malaysia Pahang can ensure their graduates have prior experience which helps in finding a job.

Universities typically enroll hundreds to thousands of students every batch. This would mean that every semester there are potentially hundreds to thousands of students undergoing industrial training. With the mass of students undergoing their trainings, an online system is used to manage and process the large number of records at increased ease.

1.2 Problem Statements

Below are the explanations about the current system regarding the industrial training logbook.

1.2.1 Current System

A student's industrial training is graded based on four different evaluations. Firstly, the student's weekly progress is evaluated by an industrial supervisor. Secondly, the student's overall performance is evaluated once a faculty supervisor. The third evaluation is through the assessment of the student's daily tasks. Lastly, the student must submit a final report.

The evaluations are recorded in physical forms and logbooks. This involves manually tallying and keying-in hundreds and thousands of students' marks by the industrial training department. There is also a time pressure to evaluate the student's logbook as the logbook can only be accessed by one person at a time. Besides that, there is a lot of paper wastage as the logbooks will only be used for that semester and thrown away after that.

The final report must be submitted via CD to the industrial training department. Many students are unable to either mail or travel to the university to submit the report. This happens when the student is offered a job at the company they interned at and must immediately start work. The submission of the report will be delayed till the student is able to take leave from work.

1.2.2 Flow of Current System

1.2.2.1 Weekly Evaluation by Industrial Supervisor

Figure 1.1 shows the flow of weekly evaluation by the industrial supervisor. Firstly, the student completes his or her tasks for the day. The student then fills up the logbook with tasks that he or she has done, accompanying with charts if necessary. This process is repeated for five working days (in a week). The student then proceeds to submit his or her book to the industrial supervisor to check. The supervisor grades the student and returns the logbook to the student.

1.2.2.2 Overall Evaluation by Faculty Supervisor

Figure 1.2 shows the flow chart of the overall evaluation by faculty supervisor.

The faculty supervisor carries out the evaluation when he or she visits the company where the student is an intern at. The student gives a presentation on what he or she has done and learnt. The student also passes his or her logbook to the faculty supervisor to check. Furthermore, the faculty supervisor takes into account the comments from the industry supervisor. The faculty supervisor grades the student on a removable form found in the logbook. Once the faculty supervisor is done with visit, he or she returns the logbook to the student. The form is submitted to the faculty coordinator.

1.2.3 Solution

By using ITeLS, students can update their logbook at any time via a paperless, environmentally-friendly method as well as submit their logbook and final report online. Supervisors can access the student's logbook at any time, therefore they can evaluate and grade the student at their own pace. The faculty coordinator may also access the grades at any time to monitor the progress of the industrial training grading process. The industrial training unit can view the tallied grades.

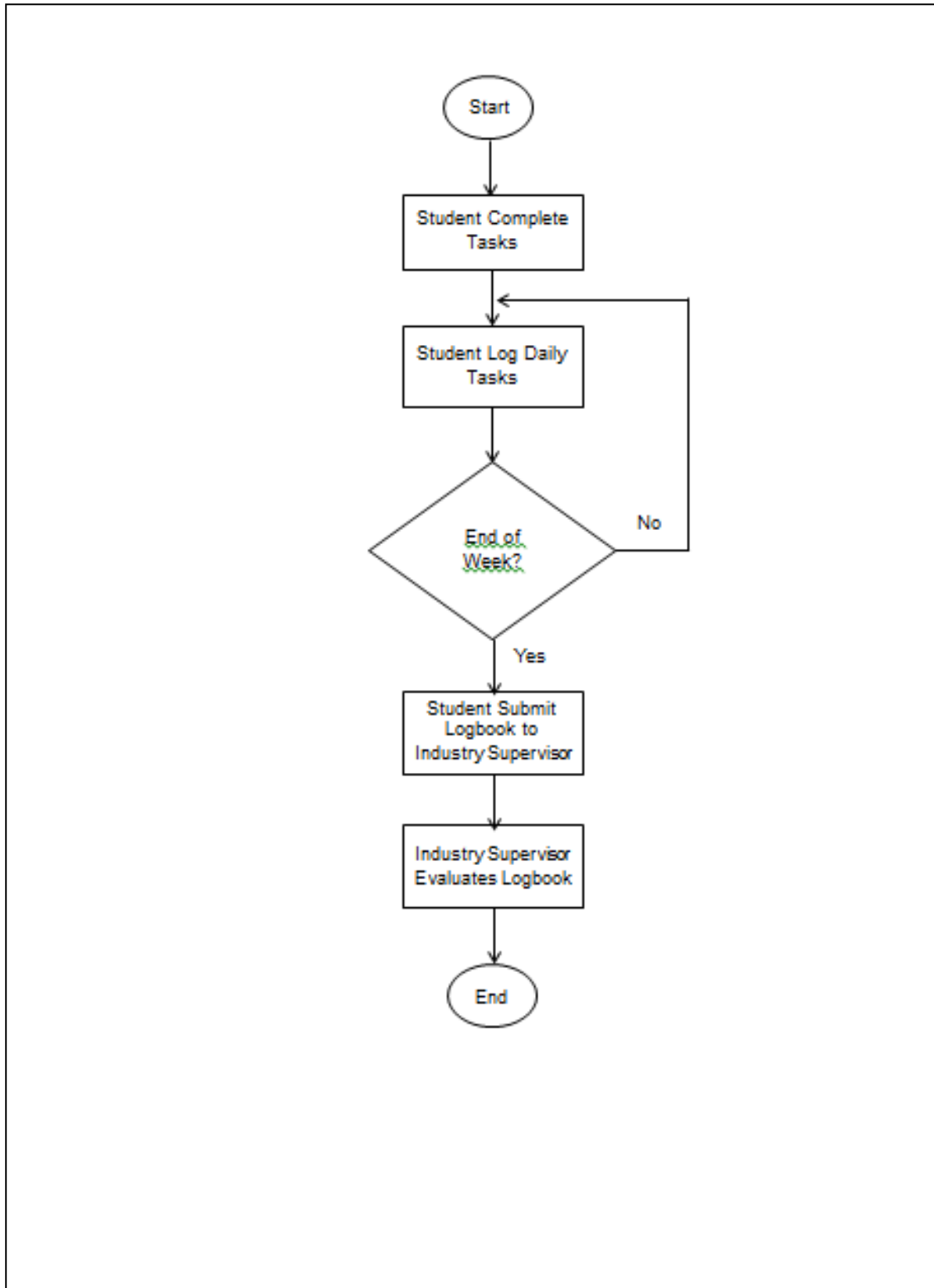


Figure 1.1: Flow of Current System (Weekly Evaluation by Industrial Supervisor)

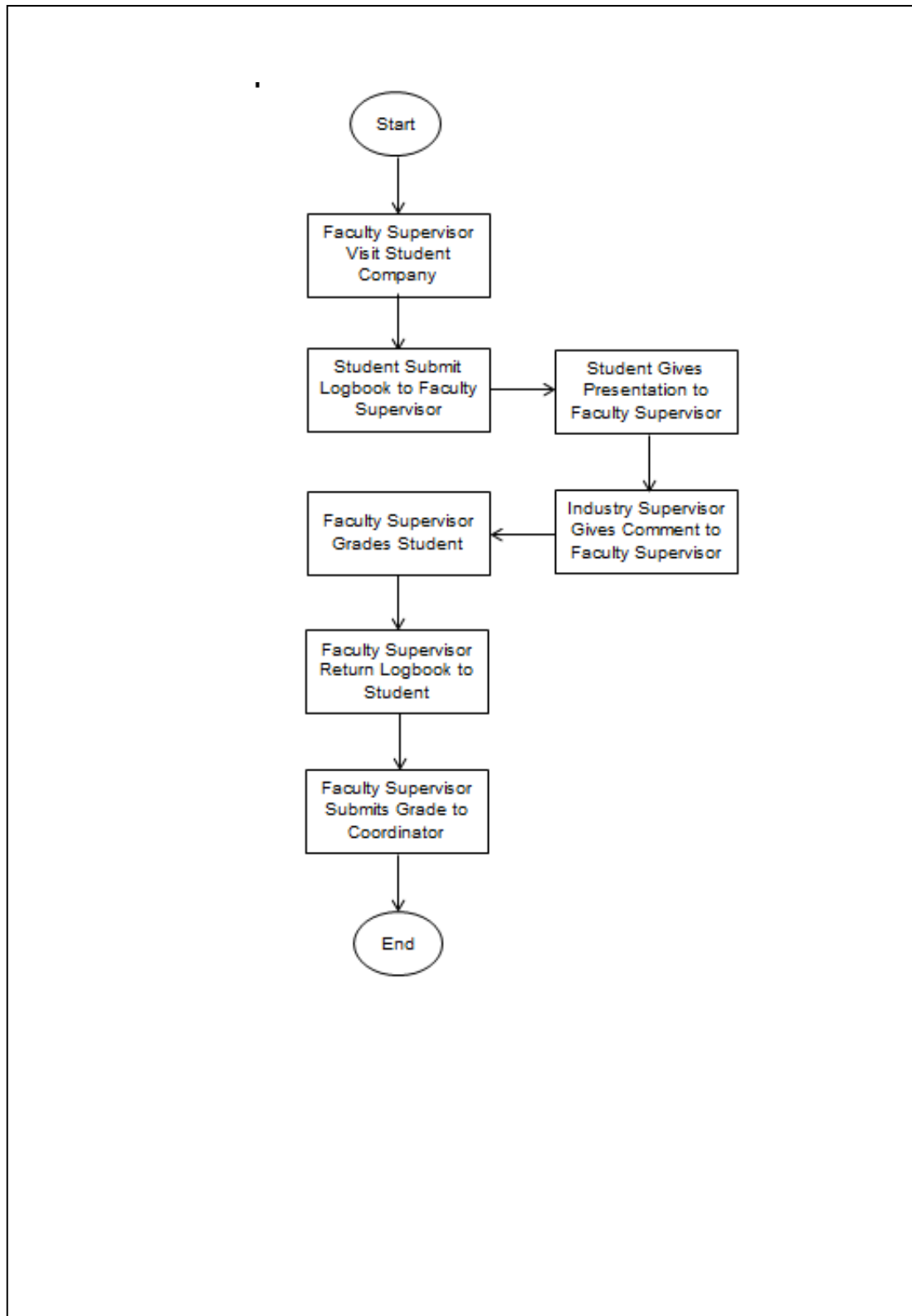


Figure 1.2: Flow of Current System (Overall Evaluation by Faculty Supervisor)

1.3 Objectives

In order to develop Industrial Training e-Logbook System, the overall objectives of this system are:

- i. To develop a web based application for managing UMP's industrial training process.
- ii. To implement Software Engineering documentation for Industrial Training e-Logbook System.

1.4 Scope

The system will be a web-based system for the use of students, faculty and industrial supervisors, faculty coordinator and Industrial Training Department.

The system will be developed with Software Engineering documents as milestones, which are Software Requirement Specification (SRS) and Software Design Document (SDD).

1.5 Thesis Organization

Chapter 1: Introduction- This chapter introduces the background of the project. This chapter explains the overall system, problem statement, objectives, scopes and thesis organisation for the project.

Chapter 2: Literature Review- This chapter will discuss the Literature Review done. In this chapter, suitable technology and tools for system development are discussed. The existing systems are also reviewed.

Chapter 3: Software methodology – This chapter explains the Methodology used in the development of the project. Besides that, this chapter also includes the Unified Modeling Language (UML) diagram such as use cases and sequences diagram. In addition, this chapter include as well approach hardware and software need.

Chapter 4: Implementation – This chapter includes the result of development which includes user interface of modules and codes used.

Chapter 5: Result and Discussion – This chapter explains about result of the project and re-examines the objectives and discusses the constraints of the project.

Chapter 6: Conclusion - This chapter is the final chapter of the thesis that summarises the project.

CHAPTER 2

LITERATURE REVIEW

This chapter briefly reviews existing techniques related with the development of Industrial Training e-Logbook System (ITeLS). This chapter consists of two sections. The first section contains the comprehensive review on existing related systems. The second section emphasizes the review on method, equipment, and technology previously used in the same domain.

2.1 Introduction

An internship is a system of on-the-job training for white-collar and professional careers. Internships for professional careers are similar to apprenticeships for trade and vocational jobs. Generally, an internship is an exchange of services for experience between the student and his or her employer. They can also use an internship to determine if they have an interest in a particular career, create a network of contacts, or gain school credit. Some interns also find permanent, paid employment with the companies in which they interned. Thus, employers also benefit as experienced interns need little or no training when they begin full-time regular employment [5]. Although interns are typically college or university students, they can also be high school students or post-graduate adults.

A management system is defined as a framework of processes and procedures used by an organization to complete all required tasks to fulfill its objectives [6]. A company's objectives may include satisfying the customer's quality requirements, complying with regulations and meeting environmental objectives.

A requirement is defined as a singular documented physical and functional need that a particular product or service must be or perform in engineering. In the classical engineering approach, sets of requirement are utilised as inputs for the design stages of product development. Requirements are also a vital input for the verification process, since tests should trace back to specific requirements. Requirements highlight the necessary elements and functions for the particular project. In systems engineering, a requirement is a description of what a system must do, referred to as a Functional Requirement. This type of requirement specifies something that the delivered system must be able to do. Another type of requirement, called Non-functional requirements, specifies something about the system itself, and how well it performs its functions. Examples of such requirements include usability, availability, reliability, supportability, testability and maintainability. In software engineering, the same meanings of requirements apply, except that the focus of interest is the software itself [7]. Requirements are crucial to the development of a software, as it enables the development to be more structured and documented.

Software documentation is defined as a manuscript which functions as the reference for the software. It encompasses explanations on how the software works or how to use it. Documentation usually gives different meanings to people in different roles. An integral component of software engineering, there are many types of documentations such as software development plan, software requirement specification, software design document, software testing plan and software testing document [8]. A clear and updated software documentation is a way of providing lifelong support because unlike information technology staff will turnover, the documentation always accompanies the software.

2.2 Existing System Review

This section reviews the current, existing systems related to internship evaluation systems.

2.2.1 United Arab Emirates University Internship and Work-Integrated Learning System (UAEU-iWIL)

UAEU iWIL is a online system that facilities the internship process for its students, colleges and employers. Students can register for their internship and fill their weekly reports. The academic advisor will follow up the student's progress automatically through the online system and evaluate weekly progress reports. Besides that, it also facilitates visiting faculty preparation and visit coordination, as well as industry registration and job posting [9]. Figure 2.1 show the home page of UAEU iWIL.

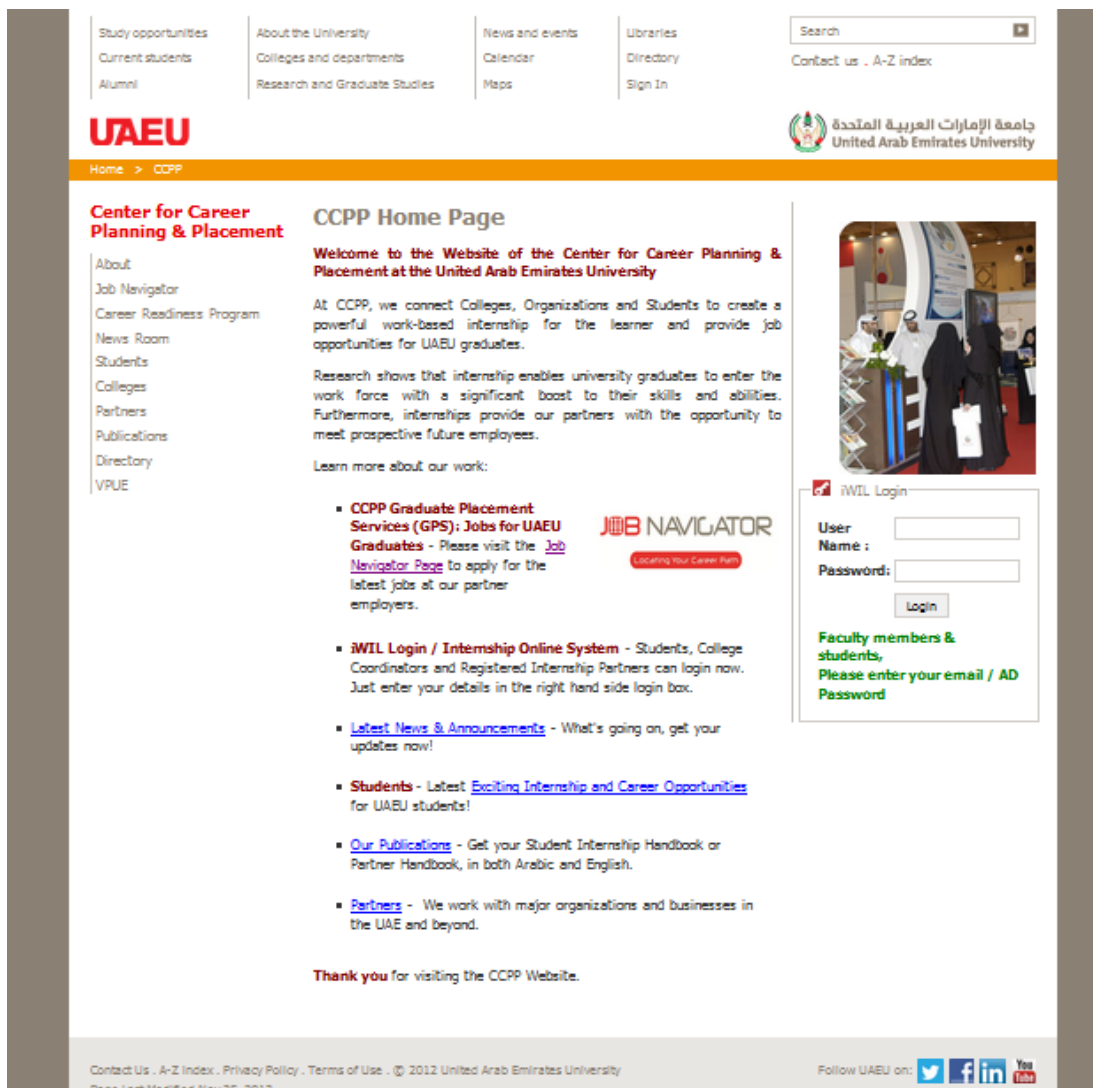


Figure 2.1: View of Homepage in UAEU iWIL

2.2.2 Pennsylvania State University College of Engineering Co-op & Internship Program Assignment Management System (Penn State CIPAMS)

Penn State CIPAMS is a system that focuses on evaluating student progress and getting student internship details. Students are able to upload their reports to the system and employers can evaluate them via online forms in the system. However the evaluations are limited to twice only; mid and end of semester only [10]. Figure 2.2 is the log in page for employers of CIPAMS and it shows the features accessible by the employer.

PENNSTATE
College of Engineering

ENGINEERING CAREER RESOURCES
EMPLOYER RELATIONS

GROWTH THROUGH INNOVATION
Co-op & Internship Program Assignment Management System

Please select, as appropriate:

Agreement Form*

Mid-Semester Evaluation*

End-of-Semester Evaluation

Approve End-of-Semester Report*

**These items only need to be completed by the supervisors of students who are seeking academic credit for their co-op or internship experiences.*

Semester: Summer 2013

User ID:

Password:

[Evaluation System Home](#)

205 Hammond Building
University Park, PA 16802

Phone: 814-863-1032
Fax: 814-863-7496
E-mail: career@enr.psu.edu

Figure 2.2 : View of Employer Log In Page for Penn State CIPAMS