

# Design and Implementation Web-Based System for Course Files Management by using WEBML Methodology: A Higher Education Perspective (King Khalid University)

Osman A. Nasr, Mohammed A. Hassanen, Ahmed A. Ahmed, Fath Alrahman T. Ebrahim

*Abstract Online System course file management aims to keep a full archive of the course file as it can be used in educational institutions or colleges for the quality of the educational service and its development later, this system depends on the standards of quality of national and international educational institutions, also the proposed system allows to retain The course file can be tracked and the decision can be adopted by the quality unit. The role of the Quality Unit comes by reviewing the course file and ensuring that its contents are complete in accordance with the standards of quality of national and international educational institutions, and accordingly the course file is approved or returned due to incomplete file. This research was based on the WEBML methodology, which aims to develop web-based information systems, and has used many tools to implement this methodology, including UML, in order to build analysis and design schemes for the proposed system as well as design the interfaces of the proposed system.*

**Keywords :** Web design & development, Course management systems, Accreditation, Computing education, quality unit.

## I. INTRODUCTION

Design and implement the proposed CFMSO and user-interface is to reduce paperwork and retain and facilitate the review of the course file contents based on the standards of quality of national and international educational institutions..

The King Khalid University is among Saudi Arabia's largest universities. It situated in the south of the Kingdom and in terms of geographical area; it is one of the largest universities in the Arab Gulf region.

The university has many branches within the Kingdom's southern region as well as many universities, each university has many academic departments and administrative units, and each department has a number of departments of faculty members and staff, and each faculty member can study more

than one course and therefore each can have a scheduled course file to prepare.

The proposed system provides faculty members with the possibility of entering the course file through the Internet in the numbers of the rapporteur's electronic file, and then entering the system with the powers granted and then the possibility of filling out the required form for the course file, which includes many fields, some of which related to a faculty member and some of them relate to the attachment of files related to the course. After completing the required data and attaching the required files that belong to the course file, the preservation and accreditation of the faculty member is transferred to the quality unit, which in turn displays all the quality files entered and reviews them and ensures that they are complete. They can also accept or reject the benefits that are submitted, depending on their completion of the academic accreditation applications.

The proposed system consists of a database, user interfaces to deal with the system, the database contains information related to the course file of them: faculty data, study level data, study years data, course data, college data and scientific departments, In addition to electronic files related to the content of the course file such as the course description and the decision report, samples of students' answers in the quarterly tests and final test, and models of students' answers to assignments, so that all the previous vocabulary forms the content of the course file figure 1

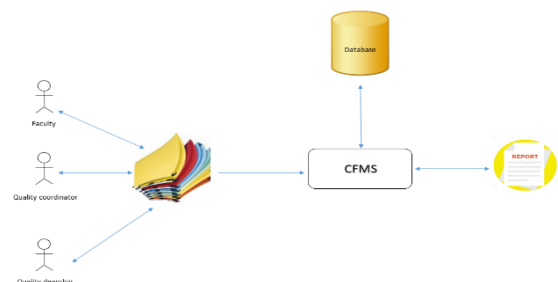


Fig. 1. Proposed System Architecture

A course management system is described as: a software system developed and marketed specifically for use in teaching and learning by the faculty and students..

Such programs have become a critical component of education at all levels, including primary and secondary education, higher education, graduate education and training in the professional sector.

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Management Systems developed to produce, monitor, document and assess learning experiences in a formal environment.

In addition, the growth of the online learning environment has resulted in the introduction of new forms of communication, including social networking and sharing of information as components of modern management systems. [1].

## II. BACKGROUND

There are many systems that run the course file management, Blackboard is important systems in academic field, in includes facilities to manage CF in terms of create, rename, copy, overwrite, move, and perform a quick search for files and folders [2].

EduTools is an online system designed to help higher education use a more reasonable decision-making process in order to explore multiple choices for a course management system [3].

Course File Management System used at the University of Tabuk, Saudi Arabia The main advantage of this system is the quick and easy user interface designed for use by accreditation committees, faculty members in accordance with the specific authorities to submit and review the course files [4]. OCFMS supports this function with an online system to help academic staff plan, coordinate and store course files in an electronic form using very easy and quick preprocess [5]. An e-course file management system: The main goal of this system is a green campus initiative, a prototype e-course file database management system to compile and organize course files via user-friendly graphical user interfaces [6].

Automated higher education program evaluation system is a software tool designed to support and control the program review process, called the Automated Program Review Management System (APRMS). APRMS handles various categories of behaviors under review.

It is also aimed at enhancing decision-making by providing timely feedback, reminders, guidelines and recommendations and making effective use of the contributions of the various stakeholders. The program was tested according to both quantitative and qualitative parameters.

In particular, a case study was portrayed using real data, gathered from a United Arab Emirates University (UAEU) program review process. The results showed that the proposed automated system leads to significant gains in time, effort and the quality of the deliverables [7].

A Report on the Implementation of the Course Management System in Indonesian Higher Education Institutions this report focuses on fourth objectives, first the management of CMS implementation, second the assessment, third originality of content, platform and feature; and fourth level of participation [8].

## III. METHODOLOGY

To develop CFMSO, the WEBML methodology has been used to design and implement the proposed system, which appears in Figure 2, the main purpose of using this methodology is to find an Internet-based electronic system to save the course files for faculty members and to send them to quality units and to retrieve and review files Scheduled by quality unit. In this methodology we do not start with a complete requirements specification for one reason, the WEBML process is it

erative and incremental in which the different phases are repeated and refined until the results meet the application requirements.

Consequently, the product life cycle undergoes multiple stages. Each of the applications produces a partial version. The current version of the application is tested and evaluated, and extended or modified to meet the requirements previously collected and the newly emerged requirements [9-11].

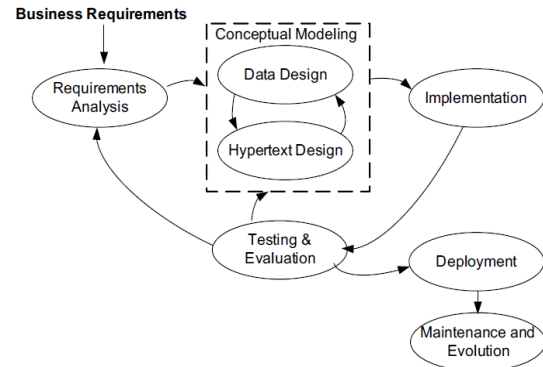


Fig. 2. WebML Methodology

This method designed to provide three rights mechanism that shown in the use case diagram in Figure 3 with the different functions for an actor and what he is doing in it.

Figure 3 shown use case diagram has four actors, first actor is faculty who course coordinator, and responsible for completing the form of his course file, second actor is accrediting committee They are a group of people whose task is to review the course file in coordination with the department head to make sure the course file is completed. If the file of the course is missing some of the requirements are returned to the faculty member, but if it is completed is submitted to the Deanship of the College for accreditation.



Fig. 3. Use case diagram of the proposed system

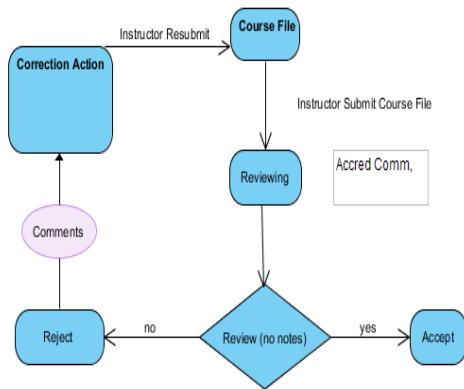


Fig. 4. Proposed System Flowchart

IV. DATABASE ANALYSIS

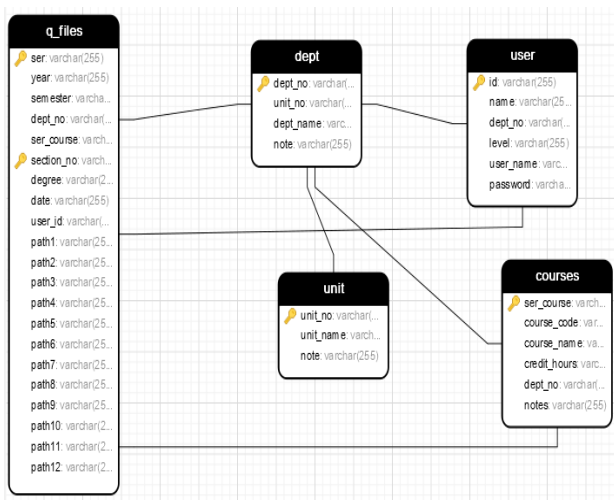


Fig. 5. ER Diagram

V. RESULTS AND DISCUSSION

The system's main interface window is shown in Figure 6. The faculty member and accrediting committee can use it to log in to access the system and head of department and college dean for the application process can use it.



Fig. 6. Main Interface of the proposed Course Files Management Using an Online System

after entering from the main interface of the system is routed according to the validity of the following interface, when entering as a faculty member is directed to the interface described in fig. 7, in order to enter a new course file or view course file already completed or completed partially need to complete, as well as tracking the status of a file already sent.



Fig. 7. Entering new course file

VI. EXPERIMENTAL EVALUATION (A CASE STUDY OF THE KING KHALID UNIVERSITY)

By interviewing the system's four participants, data obtained by interview procedure. The collection of data, by asking them the following questions:

1. Why do you need management of the course files using an online system?
2. What file types are required to be associated with a course file?
3. What kind of report does it need from the system?

The data collected shown in Table 1 providing information of the form of users participating in the interview and the number of people interviewed.

TABLE- I: DETAILS ABOUT NUMBER AND TYPES OF PEOPLES INVOLVED IN THE INTERVIEW

SI.NO	List of course file	Total
1	Course file accepted	200
2	Course file rejected	150
3	Course file not complete	100
4	Course file not entered	50

Table 2 depicts the implementation results for the proposed system. It has the list of courses available in term one at academic year 2019-2020.

TABLE- II: IMPLEMENTATION RESULTS OF THE PROPOSED SYSTEM

Type of the user	Total
High level manager (Rector, Quality deanship)	5
Managers(Dean of colleges, Heads of Departments)	5
Faculty members	20

## VII. CONCLUSION AND FUTURE ENHANCEMENTS

The CFMSO can be considered as a start point for the completion of academic accreditation for the quality unit in the college, where it serves archiving first and can give statistical indicators and comparisons and apply some algorithms to be outputs that help in the quality of the educational process at the university. Modern web technologies have been used and in the future this application can be translated into a mobile application that covers all the required indicators in quality unit and internal accreditation measures.

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