

Conference Paper

Development of Academic Transcript Management Information System

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Abstract

The academic transcripts management system in UPN "Veteran" of East Java is currently arranged based on the courses that have been taken by students who are sorted alphabetically. The problem is there is no information about the courses in each semester, so the academic transcript can not be used to know the progress of student learning. It also can not know whether there is a course that has not been taken in the previous semesters, because it can affect the process of taking courses in the next semester related to the rules of the prerequisite course. The system also lists all the courses that have been taken by the student although re-taking the course. Thus, grade point average/GPA on the Transcript is actually less valid, since the calculation of GPA should only be based on the course with the best score (when the student repeats the same course). In addition, how to know which courses have graduated and not graduated must be done through manual examination. These problems are currently done manually, which is certainly very inefficient. In this study, the application system was developed to manage the Academic Transcripts (Information System of Academic Transcripts Management). In this system, courses of old curriculum will be converted to new curriculum courses. Transcript only include graduated courses, classified per semester on the current Curriculum. The system is also designed to provide information on what courses have been taken and which have not. With this new system, the management of Academic Transcripts can be done more effectively and efficiently, thereby reducing errors and abuse intentionally or unintentionally. This certainly supports the performance of academic supervision by leaders at the level of study program, faculty, and university.

Keywords: Academic transcript, application system, course

INTRODUCTION

Management of Academic Transcripts at UPN "Veteran" of East Java has been using the application system. Based on the score of the courses taken by the students, the Academic Transcript displays a list of courses from students and the GPA/Grade Point Average. But in the process of management, a number of problems arise, among others:

1. The current Academic Transcript consists of courses arranged in alphabetical order (first letter of course name).

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The problem occurs when we want to know information about the courses in each semester that is needed to know the level of student learning progress.

In addition it also needs to know whether there are courses that have not been taken in the previous semester, because it can affect the process of taking courses in the next semester related to the rules of pre-requisite courses.

2. Academic Transcripts include all courses taken by the student, including courses whose score is K (the student takes the course but does not follow the course so that it is zero) or the course is taken again.

This causes the course's GPA to be invalid, since the GPA calculation should not include a course that has no score and only takes the best score of the course (when the student takes the same course). In addition, to find out what courses are passing and not passing must be done manually. Thus, the problem often occurs when the student will submit a Thesis Examination (which requires the student to have taken all the courses and has graduated), where the academic transcript is checked manually, there are still courses that have not been taken or courses who did not pass on the academic transcript.

In its current implementation, management of this problem is still done manually. Similarly, when it is necessary to remove the course must be done based on manual inspection by the study program administrator.

3. Academic Transcript includes all courses without considering curriculum changes (related to the conversion of courses from the old curriculum to the new curriculum).

The current academic system includes all courses, although there are often several courses that are the result of curriculum changes. Thus, students become a loss because they have to remove one of the courses. It is also very difficult in checking, because in the Academic Transcript include courses in the old curriculum as well as new ones. Checking or validation of courses is increasingly difficult for Academic Transcripts of students undergoing curriculum changes up to 2 times. Ideally, Academic ranskrip only lists the courses in the new curriculum (curriculum that is currently existed), so the course's conversion process must be performed on the management of the Academic Transcript automatically.

Through this research, the application system was developed to manage the Academic Transcript (Information System of Academic Transcript Management). Through this system, the course's conversion process is performed on courses in the old curriculum to courses in the new curriculum. In addition, academic transcript only includes courses who have graduated. The system is also designed to provide information about any course that has not been taken and which has not been, so no manual checking is required.

Based on the above background, the problems in this research are formulated as follows:

1. How to specify a course in an Academic Transcript based on course Conversions, so the Academic Transcript contains only courses in the Curriculum currently running.
2. How to validate courses on Academic Transcripts, so it is known what courses have been taken and that have not been taken by students.
3. How to determine the course of Academic Transcripts classified by Curriculum in each semester.

The purpose of this research is to create an application system (software) that manages Academic Transcripts more effectively and efficiently.

The effectiveness in this research is how the Academic Transcript can provide appropriate information related to the courses that have been taken by the students and conformity with the Curriculum Academic applied currently.

While Efficiency is meant in this research is how the process of monitoring and validation of Academic Transcripts can be done more quickly and the output is valid.

The benefits of this research are as follows:

1. For Students

Academic transcripts should be valid and indicate that the student has taken the course according to the applied Academic Curriculum. This certainly helps students to monitor their learning progress independently. Students can automatically know what courses have been taken and which have not.

2. For System Administrators

Administrators can more easily manage Academic Transcripts, so they do not have to handle them manually.

3. For Heads of UPN "Veteran" of East Java

Academic Transcript monitoring is easier to do. Possible errors and misuse in the management of course score and Academic Transcripts intentionally or unintentionally may also be reduced. This certainly strongly supports the performance of academic supervision by managers at the level of study program, faculty, and university.

METHODS

The Roadmap of the Research developed in this study is shown in Table 1. The goal of this research in the future is how to support organizational goals (UPN "Veteran" of East Java) to improve the academic management quality through the development of information systems adequately. In this Research Roadmap, the focus is to manage courses, courses score, and academic transcript so as to support academic performance more effectively and efficiently. To achieve the above organizational goals, 3 strategies are formulated as follows:

1. Managing Academic Transcripts effectively and efficiently.

Information Systems Support developed include:

- Systems that manage course score and academic transcript.
- Data migration system of the course score of the current academic system.

2. Monitoring academic transcripts Automatically and continuously.

Information System Support developed include:

- Monitoring system for the course assessment process.
- Systems that can manage curriculum changes.

3. Integrating Academic Systems

Information System Support developed include:

- Integrating Course Management System and Academic Transcript with other System that support academic management.

In this research, the system developed is Information System of Academic Transcript Management. Case studies on Informatics Department, Faculty of Computer Science, UPN "Veteran" of East Java.

Table 1. The research roadmap

ORGANIZATION		Improving the Quality of Academic Management			
GOALS					
STRATEGY	Management of Academic Transcript Effectively and Efficiently		Monitoring of Academic Transcripts Automatically and Continuously		Integration of Academic System
INFORMATION SYSTEMS SUPPORT	Building of system that manages the courses scores and Academic Transcript	Developing a data migration of courses scores of the current academic system	Establishing a monitoring system of course assessment process	Building a system that can adapt to curriculum changes	Integrating courses management systems and Academic Transcript with other systems that support academic management
RESEARCH TOPICS	Information system of Academic Transcript management	System of academic data migration management	Information system of academic assessment and transcript monitoring	System of integrated Academic Transcript Management	Academic Integrated Information System
SOURCES OF RESEARCH FUNDS	Independent research grants of UPN "Veteran" of East Java (RISDA)	Independent research grant of UPN "Veteran" of East Java (RISTI)	Research grants of Indonesian Ministry of Research and Technology	Independent research grants of Indonesian Ministry of Research and Technology	Independent research grants of Indonesian Ministry of Research and Technology
YEAR	2017	2018	2019	2020	2021

System Developments Steps

The steps taken to complete this research include (Jogiyanto, 2005; Sugiri, 2008):

1. System Requirement Analysis

Survey and analysis are conducted on the running business processes related to the management of academic transcripts. Surveys include interviews and observations to find out any important information related to academic transcripts as a material for future systems development.

2. Literature Studies

The collection of documents, references, books, sources from the Internet, or other resources required to design and implement the application system to be built.

3. Application Design

From the needs analysis and literature study will be made a general description of the system design management accreditation form. In addition, the initial design of the application will be made, so that it will produce interface design and process that is ready to be implemented.

4. Application Development

Based on the model and design of the applications that have been created, the program code and system interfaces are created. The creation of program code will use the Bootstrap Framework, so the application development process is easier and more structured.

5. Trial and Evaluation

Applications that have been made are tested and then evaluated for the feasibility of system usage.

6. Report Preparation

Documentation is prepared as a report of the entire process of research work. This report is designed to complement the requirements of the research grant and will make it easier for readers who want to refine and further develop the application.

RESULT AND DISCUSSION

This academic transcript management application system is developed with the following requirements specification:

1. The system may display Academic Transcripts composed of courses based on curriculum that is running (applied today).

Academic Transcripts are designed based on the current course structure of the curriculum, so that the courses in the curriculum were previously converted to the course in the current curriculum (Mulyana, 2004).

2. System can conduct courses validation on Academic Transcript.

Course validation is done to find out what subjects have been taken and which have not been taken by students. This is different from the previous system where the Academic Transcript listed all courses ever taken by students. In this system, the Academic Transcript only lists the courses that have the score (A-E) and the best value is taken (when the student takes the same course) (Putri, 2013).

3. The system may determine the course on academic transcripts classified according to the curriculum in each semester.

The course structure of the Academic Transcript is not based on the alphabetical order of all courses that have been taken by the students. However, in this system the Academic Transcript contains a list of all courses in the current curriculum and compiled based on the classification of each semester. If the student has not taken a course, then the score on the Academic Transcript for the course is vacated. Thus, students can know what course has been taken and what courses have not.

System Application

Application system in this research developed by using web technology, so that can be accessed online (Wahyono, 2004; Desrizal, 2006). Some user interfaces of application systems that have been developed include:

1. Menu "Beranda"

This page shows the main page of this system, as shown in Figure 1, where a number of facilities (menus) are provided, such as: "Beranda" (Home), "Kurikulum" (Curriculum), "Konversi" (Conversion), and "Login".

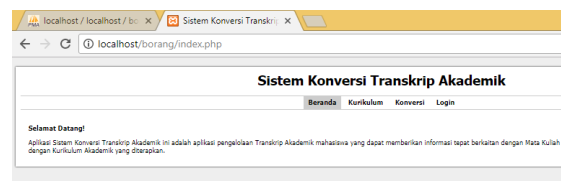


Figure 1. Menu *Beranda*

2. Menu "Kurikulum"

This page displays a list of courses in the current curriculum and also contains the course conversion from the previous curriculum, as shown in Figures 2 and 3.

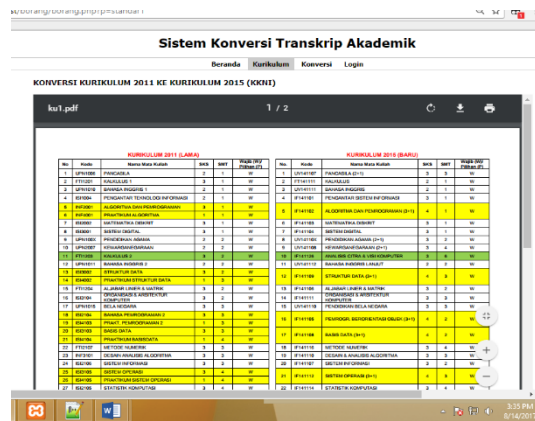


Figure 2. Page *Kurikulum*: Courses Conversion



Figure 3. Page *Kurikulum*: List of Courses of current Curriculum

3. Menu *Konversi*

This page displays academic transcripts consisting of courses under the current curriculum, as shown in Figure 4.

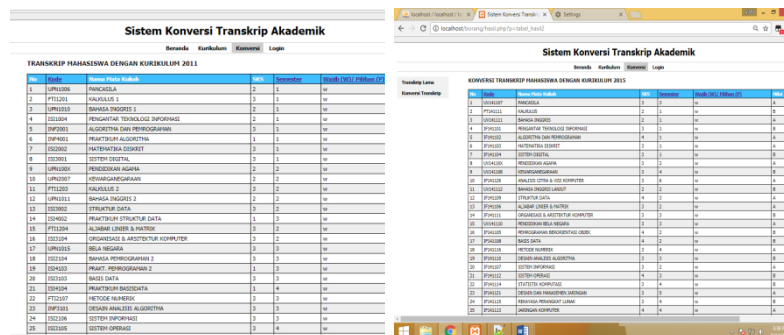


Figure 4. Page *Transkrip Akademik*: Courses taken by Students (left) and Subjects based on current Curriculum (right)

4. Menu “Konversi”

This page regulates the access rights of parties who can access the system, ie Students, Heads of Universities, and Lecturers.

System Database

The system database is developed to support management of the application system data, whose structure is shown in Figure 5.

ID	kode	matkul	sks	smt	wapu	nilai
1	UPN1006	PANCASILA	2	1	w	A
2	FT11201	KALKULUS 1	3	1	w	B
3	UPN1010	BAHASA INGGRIS 1	2	1	w	A
4	ISI1004	PENGANTAR TEKNOLOGI INFORMASI	2	1	w	B
5	INF2001	ALGORITMA DAN PEMROGRAMAN	3	1	w	A
6	INF4001	PRAKTIKUM ALGORITMA	1	1	w	B
7	ISI2002	MATEMATIKA DISKRIT	3	1	w	A
8	ISI3001	SISTEM DIGITAL	3	1	w	B
9	UPN100X	PENDIDIKAN AGAMA	2	2	w	A
10	UPN2007	KEWARGANEGARAAN	2	2	w	B
11	FT11203	KALKULUS 2	3	2	w	A
12	UPN1011	BAHASA INGGRIS 2	2	2	w	B
13	ISI3002	STRUKTUR DATA	3	2	w	A

Figure 5. System Data

CONCLUSION

Based on the results of research that has been done, several conclusions have been obtained as follows:

1. The system developed in this research supports the management of Academic Transcripts more effectively (than the previous system), where the Academic Transcript can provide appropriate information related to the course that has been pursued by the student and in conformity with the applied Academic Curriculum.
2. The developed system also supports academic management more efficiently, where the process of monitoring and validation of Academic Transcripts can be done more quickly and validly.

The research that has been done is the initial stage to realize the research roadmap where the long-term goal is to improve the quality of academic management. In the next stage, the applications that have been made in this research need to be developed in the future as follows:

1. The system can migrate existing academic data, so that all current Academic Transcripts are converted to new models on this system.
 2. The system can store details of all the course scores that have been taken by the students.
- Integrating systems with existing academic system.

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