

**THE STUDENT DATABASE
AND ITS RELATIONSHIP TO
STUDENT SERVICES**

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**UCF 21-TR-97-002
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ABSTRACT

This Technical Report is part of a systems analysis of information systems at UCF. A preliminary summary of the current student database and its relationship to student services is provided. Three views of the student database are presented: information flows, functions, and static information. This report indicates how the database supports student services and also how the organization uses the information contained in the student database. Future reports will examine how and how well information (related to student services) is being managed, communicated, and updated at UCF in order to identify areas for improvement.

Acknowledgments

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THE STUDENT DATABASE AND ITS RELATIONSHIP TO STUDENT SERVICES

1.0 INTRODUCTION

The University of Central Florida currently serves a diverse student body population of 28,000 students. One of its primary objectives has been and continues to be to improve the quality of institutional services. Several offices (e.g., Office of Student Affairs and Office of Quality Initiatives) have administered surveys to obtain an index of student satisfaction. Their findings show a high student approval rating with respect to most academic issues, in contrast to a lower approval rating with respect to those issues generally classified as “student services.” The Office of Quality Initiatives has worked closely with the process owners to improve their processes. Their approach has helped to enhance communication and understanding within various organizational functions and improve processes. There is a need, however, to identify and address systemic issues that cross organizational boundaries that involve multiple process owners.

The University, as part of its Strategic Planning Initiative, has provided funding to support the University’s Customer Focus for the 21st Century (UCF 21) project to address this need for a systems level study of student services. The primary goals of the UCF 21 project are to: 1) develop a systems level view of student services and their interactions by documenting all critical student service processes and their interrelationships; 2) identify systems level improvement opportunities, including re-engineering; 3) recommend changes and/or in-depth studies; and 4) develop implementation plans for changes and /or in-depth studies.

As part of the UCF 21 Project, there is a need to determine how and how well information (related to students) is being managed, communicated, and updated at UCF. Part of the systems analysis is to gain an understanding of how the University’s information systems support the student and student services. This report is a preliminary summary of the current student database and its role in supporting student services. Three views are included in this report: information flows, functions, and static information. Wherever possible, organizational units are named as they interact with the data so that future process analyses may be targeted appropriately. The method of performing the analysis along with the results are presented in this report.

2.0 PURPOSE OF STUDY

The purpose of the high level analysis included in this report is to examine several questions:

1. How does the student database support student services?
2. How does the organization use the student database to support students?
3. What is the content and structure of the current student database?

3.0 METHOD USED

Existing documentation was the primary source for developing an understanding of the student database. The data dictionary for the UCF student database and the Board of Regents data dictionaries were used. The UCF student data dictionary provides valuable information about the organization of the database. Additionally it provides details for each field in the database including:

- the field description,
- the source of the data,
- which organizational units collect, edit and maintain the data,
- the size of the field, and
- codes used for the field.

Documentation of the context level information flows was derived primarily from the data dictionary. An additional source was the Request for Proposal 7048RCS for the new Student Information System issued to replace the current student information system over the next year. It provided insights helpful in developing the first level functional decomposition of the requested student information system.

After completing the initial research of existing documentation, draft illustrations were created and later validated by members of the Institutional Research and Planning Support Department. Three views of the student database are given in this report. Each diagram is at the highest level and includes no lower level details. As noted above, they are inferred from the data dictionaries and RFP.

4.0 RESULTS

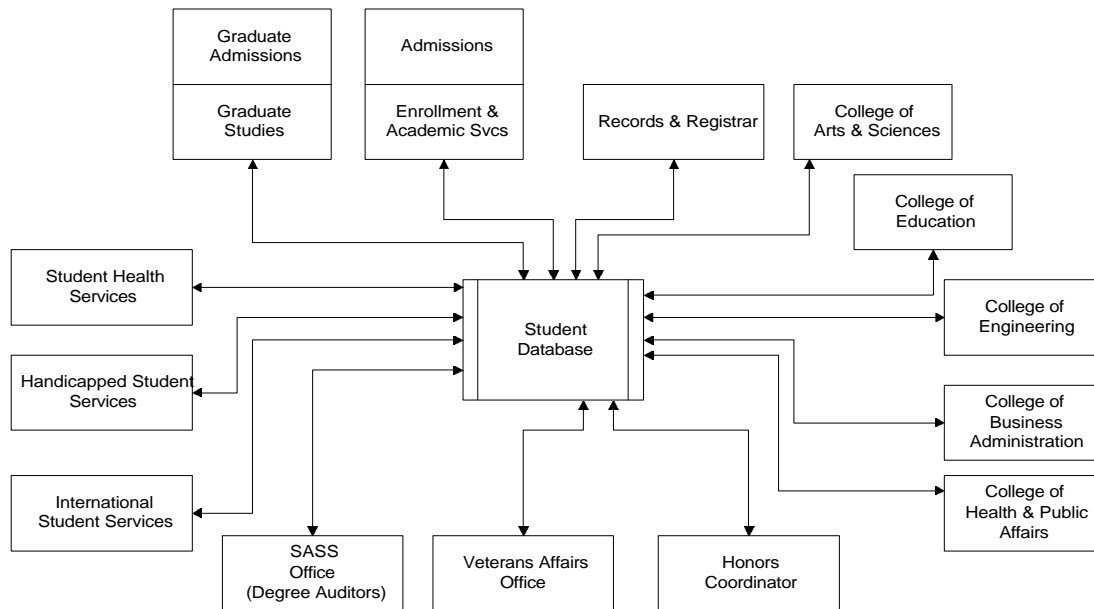
This high level analysis resulted in three views of the student database. The first view is called a context diagram and shows the student database in the context of the organizational units that maintain it. Ordinarily, those organizational units that interact with the database would also be depicted on the diagram. However, that information was not immediately available on a comprehensive basis and it was thought to be too detailed since the purpose of this diagram is to illustrate, at the highest level, the information flows to and from the student database.

The second view is referred to as a functional decomposition. Again, because this analysis is at the highest level only, the diagram only decomposes the functions to one level. Its purpose is to illustrate what university business functions are supported through or by the student database.

The third view is of the structure of the database itself. It is static in nature. The database is organized hierarchically and is illustrated as such.

4.1 Context Diagram

In Figure 1, the entities shown are organizational units at the University. The system in the center is the single student database. Other databases are not included in this diagram. Additionally, only those organizational units that maintain and edit the data are shown in the diagram. Nearly all organizational units across UCF have access to query the information in the student database, especially for validating student identification numbers. Other organizational units maintain related databases while validating students with this database (see Appendix for more details). All of these units are not shown in the context diagram.



UCF-21 Context Diagram: Student Database

November 14, 1997
Validated October 2, 1997
Organizational Units that Maintain and Edit Student Data

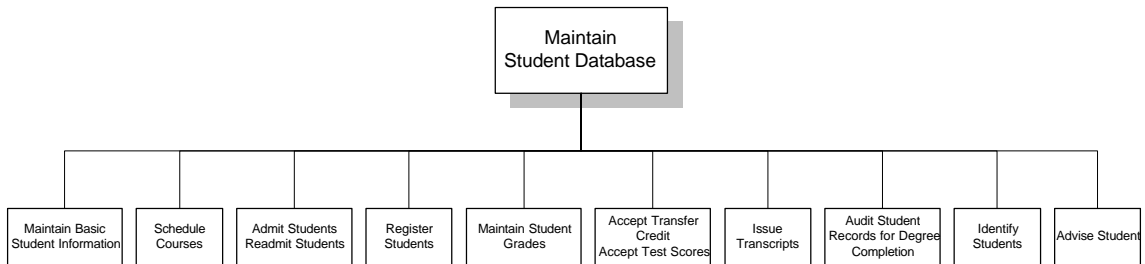
Figure 1: Context Diagram for the Student Database

All information flows are shown bidirectionally to illustrate that the organizational unit uses data in the database and then adds or updates the database. Not all organizational units have access to maintain all data fields. Those details would be shown on dataflow diagrams at more detailed levels.

The majority of the fields are maintained by the Admissions Office and/or the Registrar's Office. Some departments only maintain one or a few fields such as Handicapped Student Services, International Student Services, Student Health Services, the Honors Coordinator, and the Veterans Affairs Office. Student Health Services just recently took over responsibility for maintaining the fields related to health forms and health status.

4.2 Functional Decomposition

University business functions that are supported by the student database are illustrated in Figure 2. Each function is described by a verb and object. These functions could be further decomposed into more detailed functions. Therefore, this list of functions may not appear comprehensive because these were identified as the high level functions. The source of this information is the Request for Proposal 7048RCS for Student Information System and the existing student database data dictionary.



UCF-21 Functional Decomposition: Student Database

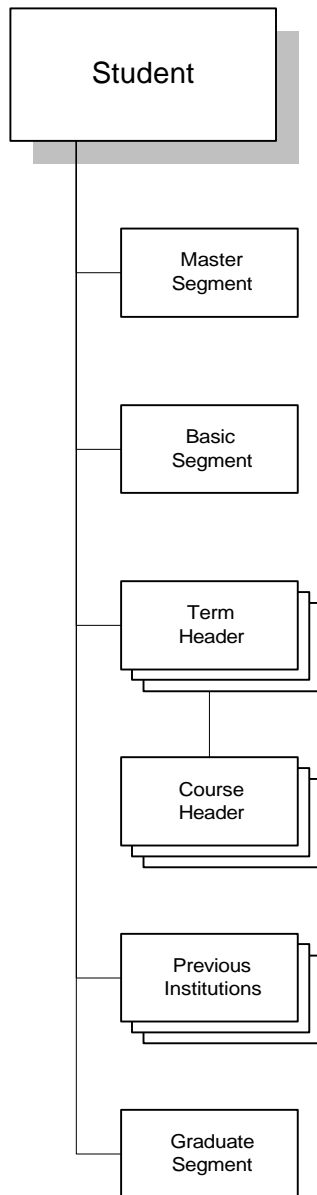
October 8, 1997

University Primary Business Functions Supported by the Student Database

Figure 2: Functional Decomposition of the Student Database

4.3 Database Structure

The physical structure of the student database is shown in Figure 3. This database is organized hierarchically. For each student there is a single master segment that contains the demographic information for the student, and one basic segment that includes the student's degree program, admission status, test scores including SAT, GRE, CLAST, and transfer information including high school units and GPA. Additionally, this record may include current term hours and grades, and current program status. There may be one or more term and course headers for each student. The term headers include information about every term that the student has been enrolled, for example, the student's residency status during that term. Each course header contains all the courses attempted during the corresponding term, with grades.



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Student Database
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Figure 3: Structural Diagram of the Student Database

5.0 CONCLUSIONS

The intention of this report is to provide a general understanding of the existing student database and how it helps to support student services in the University. From the results of this study, it can be inferred that the student database supports student services in the following ways:

- it provides evidence of student academic accomplishments through the recording of grades, courses completed, GPA, etc.
- it serves as the student data resource in registering students for courses
- it provides the source for feedback to agencies that directly or indirectly support students such as the Board of Regents, the Veterans Administration, the Enrollment Office, for funding, reimbursement, and university resources
- it helps to ensure that other accepted students are above a minimum academic level so that accreditation is maintained.

The organization uses the student database for the following functions:

- in advising students through the review of existing completed coursework and grades
- in course planning/scheduling based on the number of students that need certain courses and are enrolled in certain programs
- in processing registration, transcripts, grade reports, and admissions
- in identifying students at the cashier's office, in financial aid office, in the library, and in parking services

Although the study was at a high level, it does indicate how the student database fits within the larger scope of the UCF-21 project—namely, the study of how and how well information is managed, communicated, and updated at UCF. Because the information systems that support students and student services are much larger than those provided by the student database, the next steps are to investigate and analyze other existing databases and information systems such as:

- the financial aid database,
- the holds file,
- the fee file, and
- the housing database.

For each of these, separate technical reports will be generated in a similar manner as this one. Additionally, the RFP mentioned earlier is currently in the process of being analyzed by the author. It provides valuable information on the University's planned Student Information System (SIS) functionality and interfaces. A technical report summarizing its goals is also anticipated. Finally, we will also attempt to identify opportunities to exploit the new SIS and its technology to improve information-related student services in the future.

6.0 SOURCE MATERIALS

The University of Central Florida Official Student Database Data Dictionary

State University System Board of Regents Data Dictionaries. The URL is
<http://wwwborstate.fl.us/dept/irm/sddsmain.htm>

Request for Proposal #7048RCS for the Student Information System.

7.0 APPENDIX

The following chart contains details of which fields in the student database are maintained by the various organizational units. This material was extracted directly from the data dictionary. Codes used in the chart are as follows:

- C = collect
- E = edit
- M = maintain
- CG = computer generated

These codes refer to the type of responsibility each department has. For example, the application date field's data is collected by the Admissions department but maintained by the Registrar. Some codes may appear in more than one column. This simply means that both departments perform the operation depending on the specific circumstance. For example, CLAST requirements are maintained by both the Enrollment office and the Registrar.

The CG code refers to fields that are computer generated. This means that a person does not do the data entry but rather a software program does. Examples of computer generated fields are calculated fields such as "total current term hours" or date fields which are automatically supplied such as "key date".

The four digit numbers in the left most column correspond to the unique data element identifier as maintained by the Institutional Research and Planning Support department.

This list was used to generate the context diagram shown earlier in this document.

Appendix

Code	Description	Admissions	Enrollment	Graduate Admissions	Graduate Studies	Records, Registrar	Colleges	Student Affairs	Honors Coordinator	VA Office	SASS Office	International Student Svcs	Handicapped Student Svc	Health Svcs
1010	Student ID Number	CE				EM								
1030	Anticipated Entry Yrte	C				EM								
1050	Current Term Enrolled	-----CG-----												
1070	Last Term Completed	-----CG-----												
1090	File Flags	-----CG-----												
1110	Release Authorization					EM								
1130	Name	C				CEM								
1150	Sex	C				EM								
1170	Ethnic Origin	C				EM								
1200	College Major	C				CEM								
1250	Mailing Address	C				CEM								
1270	Current Residency	C				EM								
1290	Current Alien Status	CM				E								
1310	Citizenship	CM				E								
1330	Birth Nation	C				EM								
1350	Academic Status	C/CG				EM								
1370	Transcript Data Update	-----CG-----												
1380	Florida Student ID	CEM				M								
1410	Previous Student Num					CEM								
1450	Update Date	-----CG-----												
1470	Segment Counters	-----CG-----												
2010	Readmission Code	CEM				C								
2030	Key Date	-----CG-----												
2050	Apply Date YYMMDD	C				EM								
2070	Apply Week	CEM												
2090	Effective Residency	CEM												
2095	Fee Date YYMM	CEM												
2100	College Major Class	CEM												
2170	Birth YYMMDD	C				EM								
2190	Religion Code	C												
2210	Adm Student type	C				EM								
2230	Adm Status Area	CEM												
2250	Univ. Major Honor Code							CEM						
2260								CEM						
2270	Adm Review Wk	CEM												
2290	Adm Clg Refer Wk	CEM												

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Code	Description	Admissions	Enrollment	Graduate Admissions	Graduate Studies	Records, Registrar	Colleges	Student Affairs	Honors Coordinator	VA Office	SASS Office	International Student Svcs	Handicapped Student Svc	Health Svcs
2310	Adm Special Message	CEM												
2330	Degree Tracking							CEM						
2340	Ge Requirement									CEM				
2350	Dual Enrollment Indicat	C				EM								
2370	Additional Name Code	CEM												
2430	Letter Code	-----CG-----												
2450	Health Form													CEM
2470	VISA Ind	CE										M		
2480	FGN Language Require	CEM												
2490	UCF Transient CTR	CEM												
2500	National Scholar Finalis	CEM												
2510	Catalog Year	CE				M								
2520	Summer Session Indic	CEM												
2530	Nursing P. Therapy Pg	CEM												
2535	Patent Policy Contract			CEM										
2550	High School Units Sec													
2560	High School GPA	CEM												
2570	High School Section	CEM												
2590	Previous Institution Sc	CEM												
2610	CRN Application GPA	CEM												
2630	Placement Test Scores	CEM												
2640	12th Total	CEM												
2650	ACT Test Scores	CEM												
2670	SAT Test Scores	CEM												
2690	GRE Test Scores			CEM										
2710	ATGSB GMAT Test Sc	CEM												
2730	Assets Test Scores		CEM											
2740			CEM											
2750	CLAST Test Scores					CEM								
2760	CLAST Requirements		CEM			CEM								
2791	TOEFL Score	CEM												
2792	ATGSB GMAT AWA	CEM												
2840	Registration Section					CEM								
2920	Degree Classification		CEM			EM			SOMETIMES CG	-----				
2930	Student Advisor Number						CEM							
2990	Emergency Address	CEM												

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Code	Description	Admissions	Enrollment	Graduate Admissions	Graduate Studies	Records, Registrar	Colleges	Student Affairs	Honors Coordinator	VA Office	SASS Office	International Student Svcs	Handicapped Student Svc	Health Svcs
3010	Total Current Term Hrs	-----CG-----												
3030	Total UCF Hrs					EM								
3050	Total Transfer Hrs					EM								
3070	Total Overall Hrs					EM								
3090	UCF Grad Status Hrs					EM								
3110	Grad Program Transfer					CEM								
3130	Grad Program PB Hrs					CEM								
3150	Total Grad Prog Hrs				CEM									
3170	Grad Program Entry				CEM									
3210	Doctoral Candidacy Yt				CEM									
3230	Degree					CEM								
3276	Major CTR					CEM								
3290	Vitals					CEM								
3410	First Baccalaureate TE	C							CEM					
3430	Disability Code					CEM						CEM		
3450	Organization Code					CEM								
3490	Financial Aid Indicator	-----CG-----												
3510	Campus Prog Code	CEM				CEM								
3550	Historical Section	-----CG-----												
4010	Course Header Yterm					CEM and/or CG								
4290	Course CTR					CEM and/or CG								
5010	Registration Key					CEM and/or CG								
5210	Title					CEM and/or CG								

Appendix