

MIS DATABASE DESIGN OVERVIEW

PURPOSE

The Chancellor's Management Information System has been designed to meet a variety of information needs identified by the Chancellor's Office. The identification process has taken into account both past experience, current, and anticipated needs. The use of the information in the database will be focused on issue identification, policy analysis, program evaluation, and planning.

DESIGN OBJECTIVES

Five basic design objectives underly the Chancellor's database.

1. Accountability the ability to respond to basic questions about the students being served, their demographic characteristics, the courses and services they are utilizing, their goals, and the outcomes they achieve through the community college system.
2. Integration of data the ability to link together related data elements to serve the basic questions discussed above. For example, it should be possible to relate basic student demographic data to course activity data to answer questions about the race and gender of unduplicated headcount of students enrolled in various occupational programs.
3. Quality of data the ability to provide accurate and consistent information on a timely basis. Accuracy and consistency require editing and comparison of data in order to eliminate unreasonable information.
4. Longitudinal tracking the ability to follow the progress of students in meeting their goals, and evaluating institutional performance over time. Policy makers want the ability to measure the success of specific programs (e.g., matriculation) in achieving improved student performance. Such measurements require the ability to follow the performance of students over time.
5. Flexibility the ability to perform a variety of ad hoc analyses using a stable base of data. Emerging issues or changing circumstances should not necessarily be grounds for new data requirements being placed upon the districts.

DATABASE DESIGN

MAJOR CATEGORIES OF INFORMATION

The information system is designed to collect and organize information from three major areas of activities:

- Students;
- Faculty and staff;
- Courses

The Chancellor seeks to collect that data that can provide answers to fundamental questions related to each of the three areas listed. It would be impossible to list every possible question related to the three areas. It is more useful to review the data elements documented in the Dictionary. A review of the Dictionary will reveal the basic nature of information being sought. The use of common linking data elements (Social Security number, TOP and ASA codes, district and college number, etc.) and the use of data base software will allow data to be linked from the various categories in order to respond to a variety of questions.

CHANCELLOR'S OFFICE DATABASE OVERVIEW

As indicated, the Chancellor's Office Management Information System database is actually comprised of several databases that each represent a distinct, logical collection of data that are related together using common linking data elements and database software. The principal databases that represent the major areas of activity are the Student, Section, Course, and Employee databases. Each of these databases is logically broken down into smaller groups of data. For example, the Student database includes the Student Basic Demographic database, the Student DSP&S database, the Student Enrollment database and the Student Financial Aid database.

Each database stores a record for every occurrence of the entity that the database represents. For example, the Student Basic Demographic database represents the entity identified as: STUDENTS. Each record in this database stores demographic data for all students enrolled at every college in the state. College and student identifiers are used to identify individual students (records) at each college. Stored in every record, in addition to identifiers, are data elements that describe the entity. For example, stored in all records of the Student Basic Demographic database are student's gender, ethnicity, birthdate, etc.

The material on the following pages outlines the function of each database and each database sub-group. In addition, the manner in which the databases are related together and their associated data elements are described.

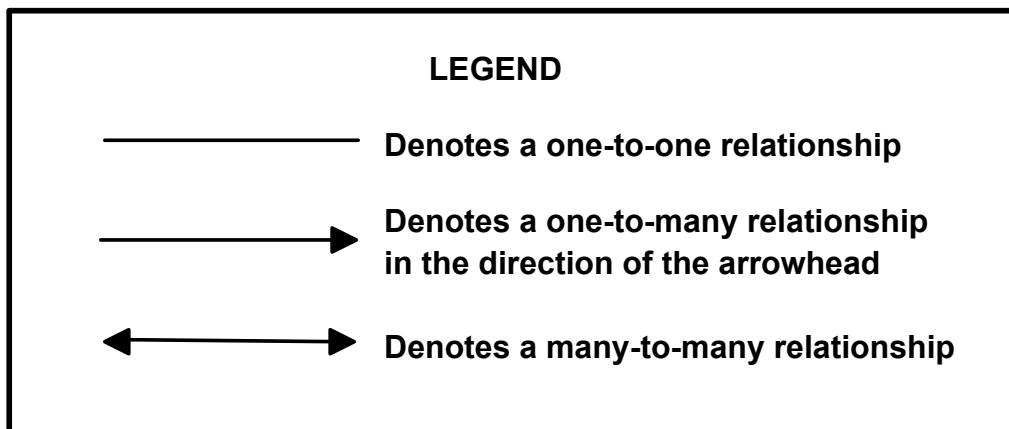
DATABASE DESIGN

Boxes and lines are used on the following pages to illustrate the databases and the relationships between them. There are three possible relationships that can occur either among two or more databases or database sub-groups. They are:

- (1) one to one,
- (2) one to many,
- (3) many to many.

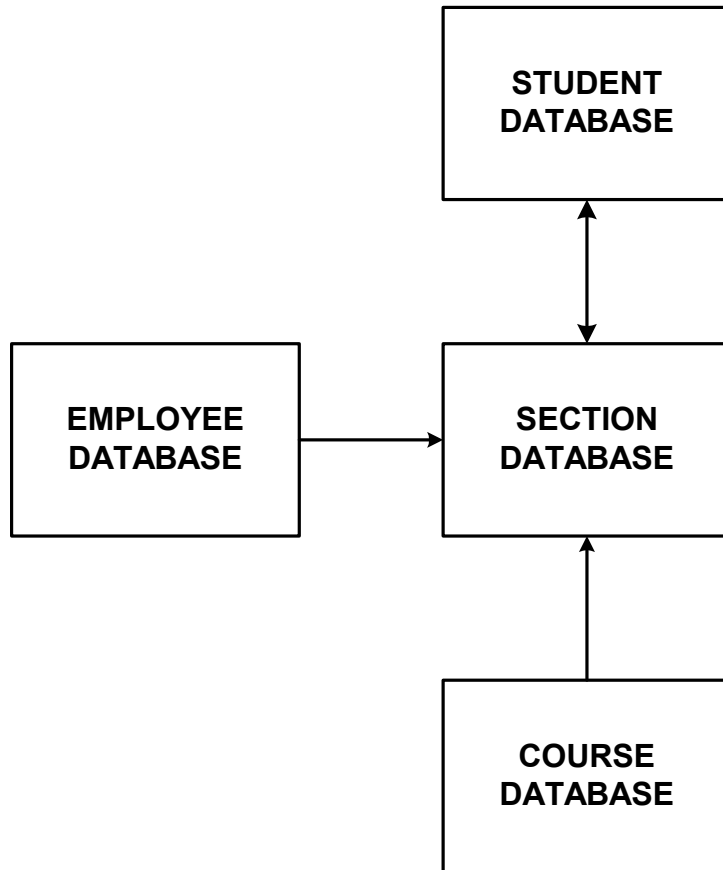
An example of a "many to many" relationship exists between the Student and the Section databases (see following pages). For every student enrolled at a college during a given term, those students can be enrolled in one or more course sections. Likewise, every course section offered at the same college can have one or more students enrolled in it.

The lines below are used on the following pages to denote each of the possible relationships that can occur between each database and between each database sub-group. The arrows show the possible relationships that can occur between databases within the reporting period for the databases being related together. For example, a reporting period can consist of a semester or quarter, or in the case of financial aid, an academic year.

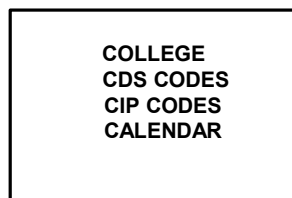


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PRINCIPLE DATABASES



SUPPORT DATABASES

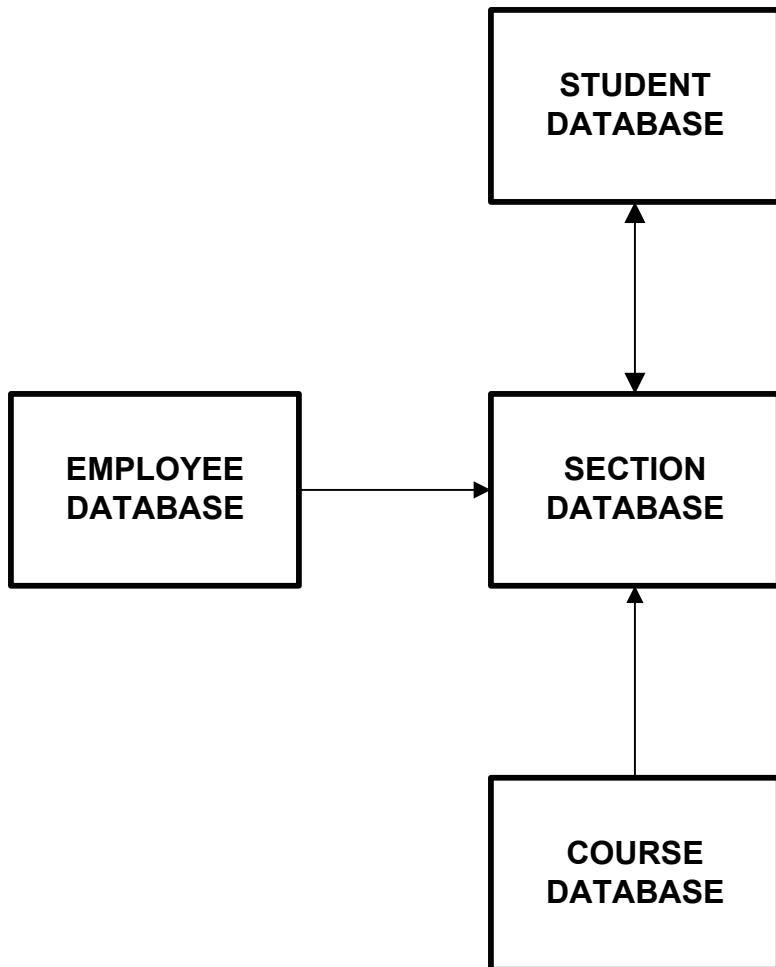


DATABASE DESIGN

PARTIAL DATABASE STRUCTURE: Focal Position of the SECTION DATABASE

Two things may be noted about the data structure as illustrated on this and the following page:

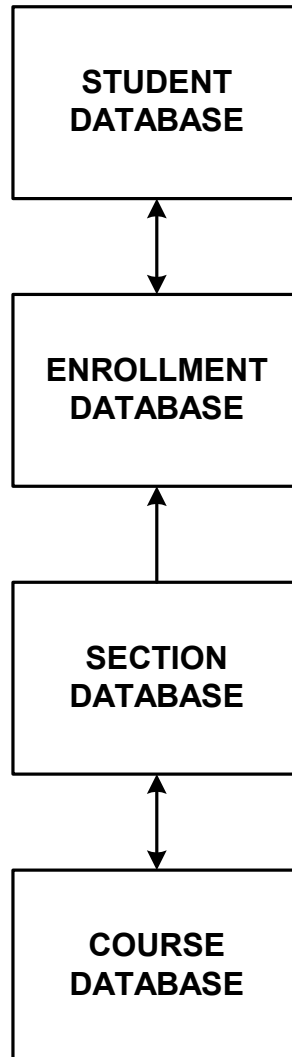
First, the focus of the database structure is the SECTION DATABASE to which the COURSE, EMPLOYEE, and STUDENT DATABASES are directly joined. This reflects the central role in an educational institution played by a section: It is the offering of a course by an instructor to a group of students.



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Second, the relation between the STUDENT, ENROLLMENT, SECTION, and COURSE DATABASES reflect the connection between the courses in which the student enrolls.



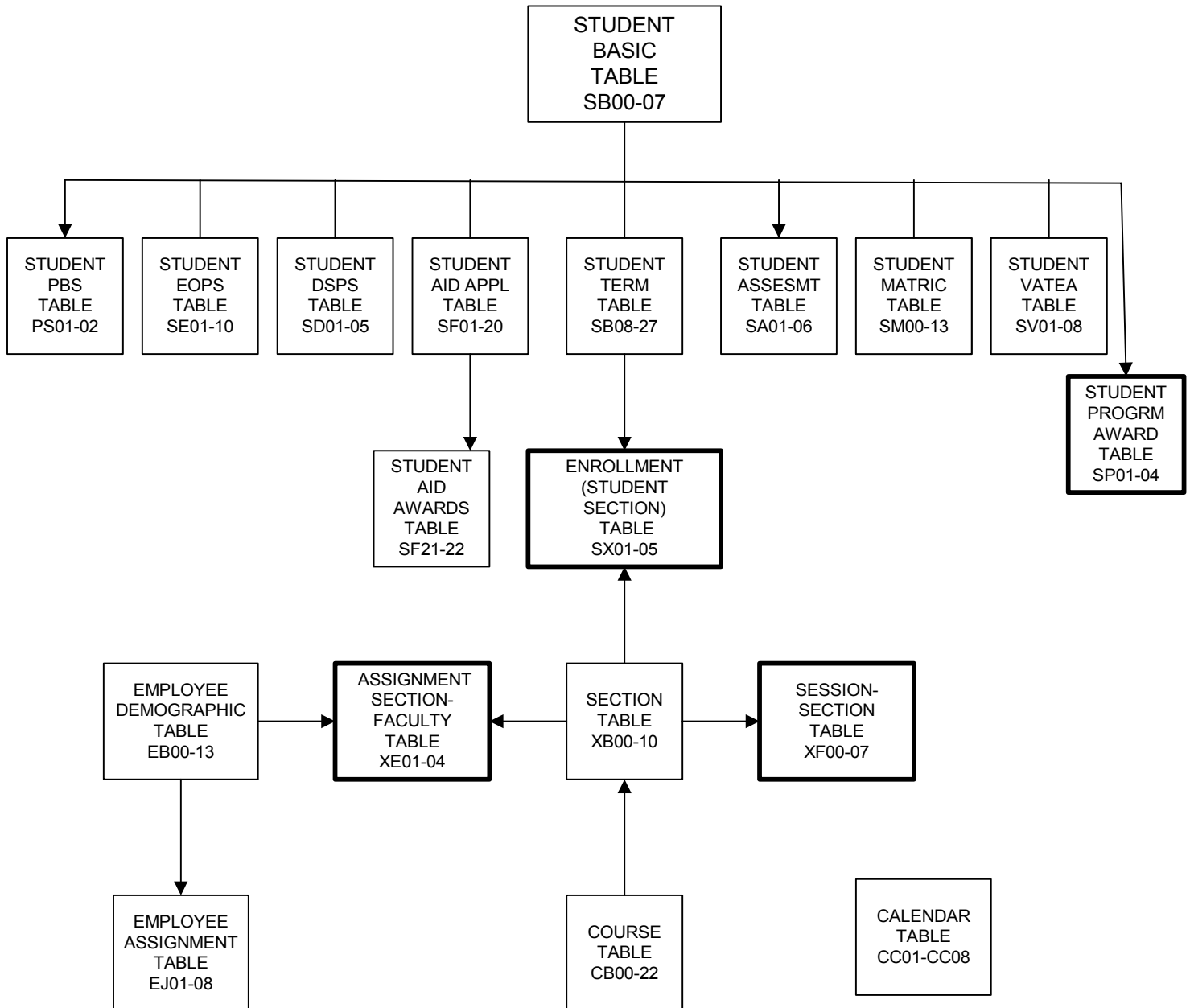
On the following pages the individual tables which make up the various databases are illustrated. Two of these tables serve the function of integrating the overall database structure; they act as the structural "glue." These interconnecting tables are:

1. The ASSIGNMENT table. This table links the Employee and Section databases.
2. The ENROLLMENT table. This table links the Section and Student databases,

On the subsequent pages, the data elements associated with each table are listed.

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DATABASE TABLES



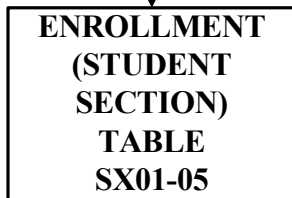
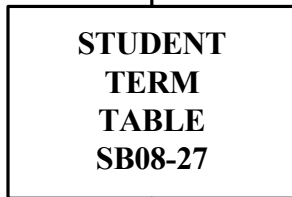
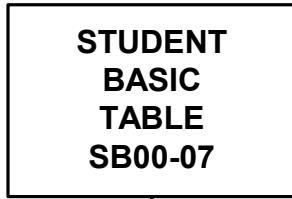
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DATABASE DESIGN

STUDENT DATABASE: Part one: BASIC, TERM, and ENROLLMENT DATA

TABLE

DATA ELEMENTS



Student-Basic

- | | | |
|--|--|-----------------------------|
| GI01 District-College-Identifier* | | SB04 Gender |
| SB00 Student-Identifier* | | SB05 Ethnicity |
| SB01 Identifier-Status | | SB06 Citizenship |
| SB02 Name-Partial | | SB07 Primary Lang (Deleted) |
| SB03 Birth-Date | | |

Student-Term

- | | | |
|--|--|--------------------------------------|
| GI01 District-College-Identifier* | | SB20 Grade-Points-Local |
| GI03 Term-Identifier* | | SB21 Grade-Total Points-
Transfer |
| SB00 Identifier* | | SB22 Academic-Standing |
| SB02 Name-Partial | | SB23 Apprenticeship-Status |
| SB08 Zip-Code | | SB24 Transfer-Center-Status |
| SB09 Residence-Code | | SB25 Gain-Status (Deleted) |
| SB10 Employ-Exp (Deleted) | | SB26 JTPA-Status |
| SB11 Education-Status | | SB27 CalWORKs-Status |
| SB12 High-School-Last | | |
| SB13 College-Last (Deleted) | | |
| SB14 Educational-Goal | | |
| SB15 Enrollment-Status | | |
| SB16 Units-Earned-Local | | |
| SB17 Units-Earned-Transfer | | |
| SB18 Units-Attempted-Local | | |
| SB19 Units-Attempted-Transfer | | |

Enrollment

- | | | |
|--|--|-------------------------------------|
| GI01 District-College-Identifier* | | SX01 Enrollment-Effective-Date |
| GI03 Term-Identifier* | | SX02 Enrollment-Drop-Date |
| SB00 Identifier* | | SX03 Enrollment-Units-Earned |
| SB02 Name-Partial | | SX04 Enrollment-Grade |
| CB01 Course-Dept-Number* | | SX05 Enrollment-Positive-Attendance |
| XB00 Section-Identifier* | | |

NOTE: These data elements belong to the table which links the Student and the Section databases, and so belong to both databases.

***Key Fields**

DATABASE DESIGN

STUDENT DATABASE: Part Two: PROGRAM AWARDS, DSPS, BASIC SKILLS, and EOPS

TABLE

DATA ELEMENTS

**STUDENT
PROGRAM
AWARD
TABLE
SP01-04**

Student Program Award

GI01	District-College-Identifier*	SP02 Award
GI03	Term-Identifier*	SP03 Award-Date
SB00	Identifier*	SP04 Co-Unique-Code
GI92	Record-Number-Identifier	
SB02	Name-Partial	
SP01	Program-Identifier*	

**STUDENT
DSPS
TABLE
SD01-05**

Student-Disability

GI01	District-College-Identifier*	SD05 Disability-Dept- Rehab
GI03	Term-Identifier*	
SB00	Identifier*	
SB02	Name-Partial	
SD01	Primary-Disability	
SD02	Primary-Disability-Services-Contacts	
SD03	Secondary-Disability	
SD04	Secondary-Disability-Service-Contacts	

**STUDENT
PRECOLLEGIATE
BASIC SKILLS
TABLE (PBS)
PS01-02**

Student-Precollegiate-Basic-Skills

GI01	District-College-Identifier*	
GI03	Term-Identifier*	
SB00	Identifier*	
SB02	Name-Partial	
PS01	PBS Units-Accumulated	
PS02	PBS-Unit-Limit-Waiver-Status	

**STUDENT
EOPS
TABLE
SE01-10**

Student-EOPS

GI01	District-College-Identifier*	SE06 Care-Term-Of-Accept
GI03	Term-Identifier*	SE07 Care-Marital-Status
SB00	Identifier*	SE08 Care-Num-of-Depend
SB02	Name Partial	SE09 Care-TANF Duration
SE01	Eligibility-Factor	SE10 EOPS/CARE Withd Rea
SE02	Term-Of-Acceptance	
SE03	End-Of-Term-EOPS-Status	
SE04	Units-Planned	
SE05	Care-Status	

***Key Fields**

DATABASE DESIGN

STUDENT DATABASE: Part Two Continued: MATRICULATION, ASSESSMENT, and VTEA

TABLE

**STUDENT
MATRIC
TABLE
SM01-13**

**STUDENT
ASSESSMENT
TABLE
SA01-06**

**STUDENT
VTEA
TABLE
SV01-08**

DATA ELEMENTS

Student-Matriculation

- GI01 District-College-Identifier***
- GI03 Term-Identifier***
- SB00 Identifier***
- SB02 Name-Partial
- SM01 Goals
- SM02 Major
- SM03 Special-Services-Needs
- SM04 Orientation-Exempt-Status
- SM05 Assessment-Exempt-Status
- SM06 Counseling/Advisement-Exempt-Status
- SM07 Orientation-Services
- SM08 Assessment-Services-Placement
- SM09 Assessment-Services-Other
- SM10 Study-Skills-Evaluation-Servs (Deleted)
- SM11 Special-Services-Referral (Deleted)
- SM12 Counseling/Advisement-Services
- SM13 Academic-Follow-up-Services

Student-Assessment

- GI01 District-College-Identifier***
- GI03 Term-Identifier***
- SB00 Identifier***
- SB02 Name-Partial
- SA01 Instrument
- SA02 Assessment-Form (Deleted)
- SA03 Accommodation
- SA04 Purpose
- SA05 Date
- SA06 Raw-Score (Deleted)

Student-VTEA

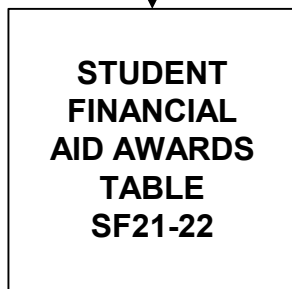
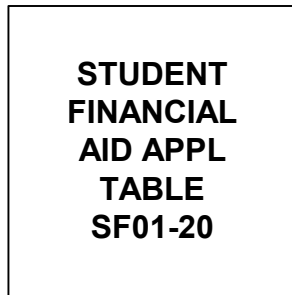
- GI01 District-College-Identifier***
- GI03 Term-Identifier***
- SB00 Identifier***
- SB02 Name-Partial
- SV01 Vocational-Program-Plan-Status
- SV02 Funded-Status (Deleted)
- SV03 Econ-Disadv-Status
- SV04 Single-Parent-Status
- SV05 Displaced-Homemaker-Status
- SV06 Coop-Work-Experience-Educational-Type
- SV07 Criminal-Offender Status (Deleted)
- SV08 Tech-Prep-Status

***Key Fields**

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TABLE



DATA ELEMENTS

Student-Financial-Aid-Applicant

- GI01 District-College-Identifier***
- GI03 Term-Identifier***
- SB00 Identifier***
- SB02 Name-Partial
- SF01 Applicant-Status
- SF02 Time-Period
- SF03 Budget-Category
- SF04 Total-Budget-Amount
- SF05 Dependency-Status
- SF06 Household-Size
- SF07 Family-Status
- SF08 Income-AGI-Parent
- SF09 Income-AGI-Student
- SF10 Untax-Inc-Parent
- SF11 Untax-Inc-Student
- SF12 TANF-Status (Deleted)
- SF13 Contrib-Parent (Deleted)
- SF14 Contrib-Student (Deleted)
- SF15 Other-Resources (Deleted)
- SF16 Gross-Fin-Need (Deleted)
- SF17 Pell-Grant-Index
- SF18 Vet-Benefits-Status (Deleted)
- SF19 Work-Study-Hours (Deleted)
- SF20 Campus-Employ-Amt.(Deleted)

Student-Financial-Aid-Award

- GI01 District-College-Identifier***
- GI03 Term-Identifier***
- SB00 Identifier***
- GI03 Term-Received
- SF21 Award-Type
- SF22 Amount-Received

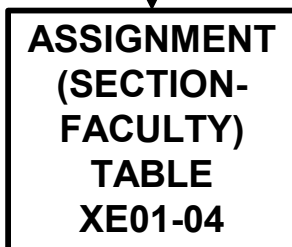
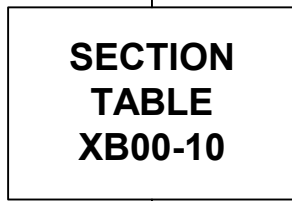
*Key Fields

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DATABASE DESIGN

SECTION DATABASE: SESSION, SECTION, and ASSIGNMENT

TABLES



DATA ELEMENTS

Session

GI01	District-College-Identifier*	XF06 Meeting-Time-Ending
GI03	Term-Identifier*	XF06 Meeting-Time-Ending
CB01	Course-Dept-Number*	XF07 Total Hours
XB00	Section-Identifier*	
XF00	Session Identifier*	
XF01	Instruction-Method	
XF02	Date-Beginning	
XF03	Date-Ending	
XF04	Days-Scheduled	

Section

GI01	District-College-Identifier*	XB03 Date-Census-Second (Deleted)
GI03	Term-Identifier*	XB04 Contract-Education-Code
GI02	District-College-Division*	XB05 Units-Maximum
CB01	Course-Dept-Number*	XB06 Units-Minimum
XB00	Section-Identifier*	XB07 VTEA-Funded-Status (Del)
XB01	Accounting-Method	XB08 DSPS-Special-Status
XB02	Date-Census-First	XB09 Wrk-Based-LearningActs
		XB10 CVU/CVC Status

Faculty-Assignment

GI01	District-College-Identifier*	XF00 Session-Identifier*
GI03	Term-Identifier*	XE01 Type
CB01	Course-Dept-Number*	XE02 Percent
XB00	Section-Identifier*	XE03 FTE
EB00	Employee-Identifier*	XE04 Hourly Rate

*Key Fields

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COURSE DATABASE:

DATABASE DESIGN

TABLE

<p>COURSE TABLE CB00-22</p>
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DATA ELEMENTS

Course

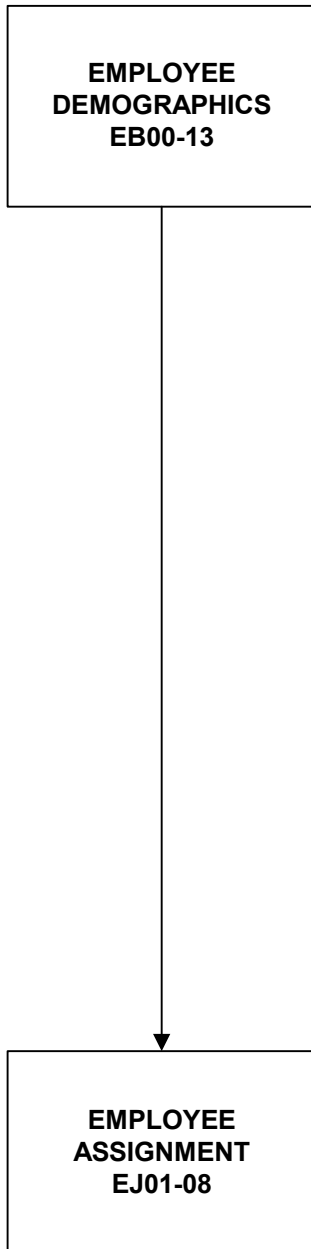
GI01 District-College-Identifier*
GI03 Term-Identifier*
CB00 Permanent-District-Identifier (Deleted)
CB01 Department-Number*
CB02 Title
CB03 Top-Code
CB04 Credit-Status
CB05 Transfer-Status
CB06 Units-Of-Credit-Maximum
CB07 Units-Of-Credit-Minimum
CB08 Basic-Skills-Status
CB09 SAM-Priority-Code
CB10 COOP-ED-Status
CB11 Classification-Code
CB12 Repeatability (Deleted)
CB13 Special-Class-Status
CB14 Can-Code
CB15 Can-Seq-Code
CB16 Same-As-Dept-Number 1 (Deleted)
CB17 Same-As-Dept-Number 2 (Deleted)
CB18 Same-As-Dept-Number 3 (Deleted)
CB19 Crosswalk-CRS-Dept-Name
CB20 Crosswalk-CRS-Number
CB21 Prior-to-College-Level
CB22 Noncredit-Category

***Key Fields**

LAST REVISION: 10/01/00

DATABASE DESIGN
DATA ELEMENTS

TABLE



Employee-Demographics

- GI01 District-College-Identifier***
- GI03 Term-Identifier***
- EB00 Identifier***
- EB01 Identifier-Status
- EB02 Birth-Date
- EB03 Gender
- EB04 Ethnicity
- EB05 Citizenship
- EB06 Disability-Status
- EB07 EEO6-Occupational-Activity
- EB08 Employment-Classification
- EB09 Employment-Status
- EB10 Date-of-Employment
- EB11 Employment-Contract-Duration
- EB12 Annual-Salary
- EB13 Annual-Stipend
- EB14 DO NOT IMPLEMENT**

Employee-Assignments

- GI01 District-College-Identifier***
- GI03 Term-Identifier***
- EB00 Employee-Identifier***
- EJ01 Type
- EJ02 Leave-Status
- EJ03 Account-Code***
- EJ04 Weekly-Hours
- EJ05 Hourly-Rate
- EJ06 Total-Annual-Hours
- EJ07 Total-Payment
- EJ08 FTE

***Key Fields**

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RATIONALE FOR DATA ELEMENT CODE VALUES

A. Objectives for Data Element coding scheme:

- Ensure consistency in coding all data elements;
- Provide rules which will act as a set of principles to guide the designer when creating a new set of codes for a new data element;
- Allow the user to apply rules that are "easy" to remember when interpreting data generated from ad-hoc queries;
- Develop a reporting system that is based on Positive Reporting.

Positive Reporting is founded on the principle of requiring a valid response for all data elements (i.e., blanks and spaces are not valid values). This is to ensure that no data element is omitted

B. Data Element Classifications:

The data elements defined in the Data Element Dictionary fall into three classes of data: Alphanumeric, Numeric, and Dates.

- Alphanumeric:

- Numeric Codes (0-9):

This coding scheme implies an ordering or ranking of codes. This implied ordering or ranking can occur for two reasons. First, the items of a data element may have a logical order or rank associated with them. In addition, numeric codes are used where there is a preferred ordering or ranking of data items on the input source documents or the output terminal displays and paper reports.

- Alpha Codes (A-Z):

There are three reasons for using alpha codes. First, if there are more than ten categories of data items and there are requirements to limit the size of the data element to one character, alpha codes may be used to accomplish this. Second, where it seems appropriate, alpha codes may be used to embed some intelligence into the data items. For example, data items for Student Gender (see SB04) are coded "F" for "Female" and "M" for "Male". And third, where it is desirable to code data items with no order or intelligence, alpha codes may be sequentially assigned for this purpose.

- Period (.):

A period (.) as part of a code acts as a place holder. This coding scheme is used to follow the principle of Positive Reporting.

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- Numeric:
 - Not to be confused with Numeric Codes (above), numeric data elements contain numeric values that will be used in some arithmetic calculations.
- Dates:
 - Date data elements represent valid dates in the format YYMMDD, where YY = Year, MM = Month, and DD = Day. The birthdate has been changed to YYYYMMDD, where YYYY = Year, MM = Month, and DD = Day. The Chancellor's Office will determine the century. The day must be within a range valid for that month. Also, leap year must be considered when reporting for February (i.e., 28 or 29 days).

C. Defaults:

There are circumstances or conditions that require the use of a default value when the coding of a data element is unknown or not applicable. (Note: Some data elements do not allow default values. Refer to the Data Element Dictionary to determine if a default value may be applied to a particular data element.)

The conditions that can occur in which default values are used.

- Unknown and Unreported: This occurs when the value for a particular data element is unknown because it could not be captured from the data source (i.e., a student did not fill out a survey item). Thus, the value for the data element is unknown and unreported.
- Not Applicable: This occurs when there are two data elements that can be reported for the same entity, and depending on their values, only one of those data elements is applicable, but not both. Data Elements that fall into this classification are said to be mutually exclusive of one another. That is, if a data element is reported so that it negates the application of another data element, they are said to be mutually exclusive.

For example, if a student drops a course, then the Enrollment Drop Date is coded with the appropriate date. If the student does not drop the course, the Enrollment Drop Date has no meaning for that Student Enrollment. Therefore, the Enrollment Drop Date would be coded as "Not Applicable." (i.e., "888888" since it is a date field.)

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Default Codes:

The following table specifies the coding scheme that is used to represent each of the above default conditions for each data classification.

Codes Reported by Districts

<u>Data Class</u>	<u>Not Applicable</u>	<u>Unknown Unreported</u>
Alphanumeric	Y	X
Numeric	8	9
Dates	8	9

D. General Guidelines for Coding the Unused portion of a Data Element:

These are general guidelines that are to be followed when developing applications that will generate codes or values for each data classification.

- Alphanumeric: Unless otherwise specified, these data elements should be left-justified with trailing blanks. NOTE: Some data element definitions call for other literals to be inserted in unused portions instead of blanks and also call for right-justification. See the data element dictionary for actual coding specifications.
- Numeric: Right-justified, decimal aligned with leading zeros before the first significant digit.
- Dates: Date fields are six-digits in the format of YYMMDD, where YY = Year, MM = Month, and DD = Day. The birthdate has been changed to YYYYMMDD, where YYYY = Year, MM = Month, and DD = Day. The Chancellor's Office will determine the century. The date should completely fill the field. If coding a date that has a month or day that is only one digit, insert a leading zero, i.e., January 1, 1988 would be coded as "880101".