

**Intelligent Scheduling System (ISS)**

Thesis proposal

for the degree of Master of Science in Computer Science

at Southern Connecticut State University

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**Major-Field Approval** – The advisor and the department chairperson

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*Advisor*

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*Date*

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Chairperson

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Date

A: Title

Intelligent Scheduling System (ISS)

B: Introduction

The Computer Science Department at SCSU admits graduate students to its Master's of Science program on bi-annual basis. According to the procedures set by The Office of The Graduate Studies at SCSU, graduate students must design a plan of study before admission process is complete by selecting a series of classes from the available pool of classes. This plan is reflected in a form called "Planned Program of Study" which is signed and endorsed by the student, the graduate advisor and the Dean of graduate studies. This plan is used as a roadmap for the student to follow for the period of her studies at SCSU.

The plans of study are also used by the department to schedule graduate classes to meet the needs of the students and timely offering of a proper selection of graduate classes during academic year.

At the present time, this process is completed manually by going through the individual planned programs of study for all students and also their transcripts to determine the classes in demand. By rapid growth in number of students in the department manual task is becoming extremely difficult.

The objective of this project is to design an intelligent scheduling system (ISS) based on relational database approach to address the registration and scheduling problem for graduate students in the department of Computer Science at SCSU.

ISS is a software package to help the graduate adviser to keep track of the student's planned program of study in order to assist them with registration, thesis enrollment and graduation planning. It also helps the graduate adviser analyze student areas of interests and plan for course scheduling and curriculum enhancements.

### C: Literature Review And Current State-Of-The-Art

Currently most advisers use spreadsheets, such as Microsoft Excel to store and analyze student information. However, eventually a spreadsheet becomes too cumbersome to store records and it might become inconvenient to search for individual spread sheet. ISS will not only solve this problem but also can be further used to customize solutions that integrate easily with the Web.

ISS being a customized unique solution of its kind would use backend as relational database [5] for storage, retrieval and analysis data. Various websites and books are available that would help us in understanding and comparing relational database. Relational Database like Access 2000[2], Oracle are used to implement the database. Oracle Corporation [4] and Microsoft [3] provide us with in depth technical details about their relational database product. Microsoft [1] helps us in comparing relational database in terms of users, compatibility and understanding selection of database.

To design database one needs to have proper understanding of conceptual, logical and physical design [6]. Computer Associate's Erwin case tool [8], Microsoft Visio's case tool [7] would help us in designing ISS database.

## D: Methodology

ISS is a system that helps the graduate adviser maintain planned program for each student. The application will also help the advisor to keep track of how each concentration is received by students. It will be used to improve scheduling process.

The application starts with the Main Menu that provides a link to different options of the application. Figure 1.1 shows a sample Main Menu screen

- *Getting started:* This option leads to a user guide with all the information on navigating and using the application.
- *Data entry:* This option has a link to enter master data, add, delete, update student information and enter new planned program of study.
- *Import/Export:* This option is used to import or export data to or from the database. This option will be useful when downloading data with different format or from other database management systems.
- *Administration:* This option is used to make changes in the user interface of the application, to add or delete reports or to make changes in the database design.
- *Close Database:* This option allows the user to exit the application.

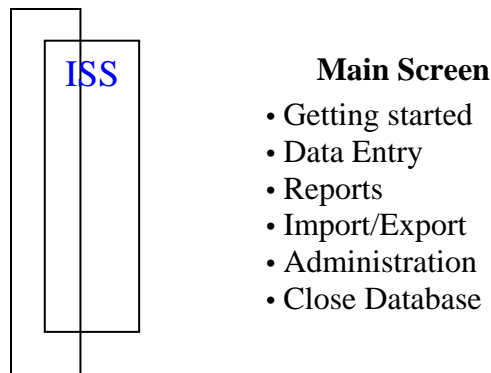


Figure 1.1 Main Menu Screen

Sample Data Entry screen is shown in Fig. 1.2.

In *Data Entry* screen there are links to available forms. The forms are

- *Student Master*: This form is used to add a new student to the database. The form is also used to update or delete student records.
- *Planned Program*: This form is used to enter information to plan student's graduate program. The form may also be used to make changes in student's planned program. The form will be used to mark the classes a student has completed.

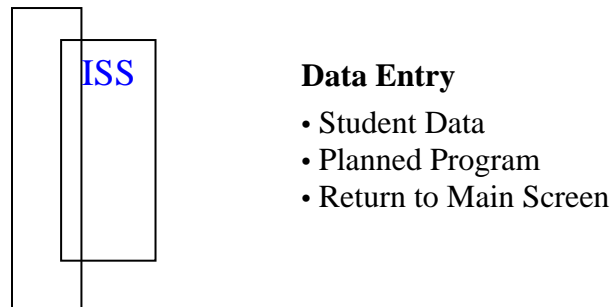
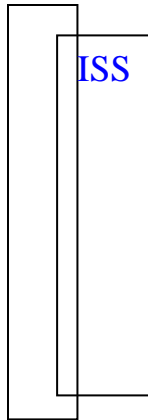


Figure 1.2 Data Entry Screen

Sample Reports screen is shown in Fig 1.3.

In *Reports* screen reports available are:

- *Student Data*: This option is used to report personal information on a student such as id no, name, home address, home phone no, email address and enrolled date.
- *Planned Program*: This option displays the current planned program for a student. To get the report the user will have to enter student's id number or name.
- *List of Courses to be Offered*: Displays a report including a list of courses to be offered during the next semester to satisfy the student needs.



### **View Reports**

- Student data
- Planned Program
- List of courses to be offered
- List of courses to be offered with less than 10 students
- List of students eligible to enroll for thesis
- List of students eligible for early graduation
- Create custom report
- Return to Main Screen

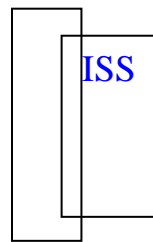
Figure 1.3 View Report Screen

- *List of Courses to be Offered with Less than 10 Students:* Displays list of classes which are in less than 10 students planned program. These are the classes, which may be offered considering the under load option
- *List of students who are eligible to enroll for thesis:* A student is eligible to start thesis after completing 15 credit hours in the program. The report will help the graduate advisor to estimate of number of faculty release time hours needed to support Masters thesis.
- *Students eligible for early graduation:* These are the students who have completed all classes in the planned program of study except for their thesis. They are eligible to participate in graduation ceremony.
- *Create Custom Report:* allows the user to create report as per requirements using report wizard. These reports would be created based on existing tables and queries and will be added to the system.

Sample Administration screen is seen in Fig 1.4.

*Administration* screen will have links to

- *Display Database Window:* Allows the graduate advisor to administer the data directly in the database. Make changes in the Data Definition of the database or file structures and indices.
- *Change Main Screen:* is used to make changes in the main screen in order to add and remove options.



#### **Administration**

- Display Database Window
- Change Main Screen Option
- Return to Main Screen

Figure 1.4 Administration screen

ISS would use Microsoft Visio case tool in designing forms and reports while ERWIN, a Computer Associates case tool would be used in conceptual, logical and physical design of the ISS database.

The heart of ISS software is implementing planned program and determining the schedule of classes to be offered each semester.

The planned program has to be unique per student. Determining number of courses taken, number of courses transferred and allow flexibility to adjust schedule that suits student and also adheres to computer science department graduate program rules and regulations is one of the most important task of designing this project.

Since a student can change her/his planned program the complexity of the project in terms of scheduling will increase. Any single change in planned program will be treated as a full new class schedule for the student and will affect the set of class that needs to be offered. The software will be robust to allow such changes without affecting the performance of the system while querying the database or running the reports that will require a proper analysis of the logical design.

#### E: Contributions of the Project

The goal of the Project is to automate the process of student advisement and course scheduling. The Project will also provide information on student status, which will aid faculty schedules and assignments and preparation for the thesis presentation and graduation.

The project focuses on improving graduate advisement; scheduling and departments program evaluation.

#### F: References

1. [http://www.clearform.com/microsoft\\_access.htm](http://www.clearform.com/microsoft_access.htm)
2. Microsoft Access 2000 bible, Cary Prague and Michael R. Irwin – Gold Edition Wiley Publishing
3. <http://www.microsoft.com/office/access/evaluation/tour/default.asp>
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5. [http://myphliputil.pearsoncmg.com/student/bp\\_hoffer\\_moderndbmgmt\\_6/chap01r.ppt](http://myphliputil.pearsoncmg.com/student/bp_hoffer_moderndbmgmt_6/chap01r.ppt)

6. <http://www.sum-it.nl/cursus/dbdesign/english/logis010.php3>

7. <http://www.microsoft.com/office/visio/default.asp>

8. <http://www3.ca.com/Solutions/Product.asp?ID=260>