

**INFSCI 2470: Interactive System Design**

## **Heuristic Evaluation Project**

**Evaluated System:  
Course Agent**

**<http://www.sis.pitt.edu/~cagent>**

### **Group Members**

**Abdul Raqeeb Abdul Azeez**

**Arash Farsi**

**Sriranjani Mandayam**

**Denis Parra**

**Fall 2010**

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### **Introduction:**

This report presents a heuristic evaluation of Course Agent, an adaptive hypermedia system developed by the PAWS lab at School of Information Sciences, University of Pittsburgh. Its objective is to support graduate students of the school in selecting courses by presenting them static and personalized information. It also helps faculty advisors to keep track of their advisees' courses and interests.

Course Agent has very distinctive features. On one side, it provides social navigation support by means of averaging feedback provided by users on specific courses. This characteristic is reflected by the workload of every course. On the other side, using information of career interest provided by students, the system is able to recommend courses that match their interest. Finally, the students can see recommendations that the faculty give depending on different career profiles.

This system provides valuable help to students, especially newcomers, since it focuses on a fundamental activity of any graduate student. However, it is not difficult to identify some problems in its implementation, and the purpose of this report is to identify, classify, evaluate and propose solutions for these problems. This evaluation focuses not only on the student's interface, but also on the administrator interface. The latter is a very important portion of the system, and it presents some implementation flaws that range from requiring additional steps to do a task to problems that can lead to security risks.

This report is divided in three sections. The first one presents issues and good features found in the student's interface, the second section shows good characteristics and problems identified in the administrator interface, and the third section summarizes all these findings in a table and gives some conclusions.

## I. Student Interface:

<b>HE1 -- Good Feature</b>
<b><u>Name</u></b> Home Page
<b><u>Evidence</u></b> <i>Heuristic: Simple and natural dialog</i> The home page clearly presents to the user the different roles in which a person can login to the system 
<b><u>Explanation</u></b> The system indicates that there are three different roles in which user can be allowed to login, i.e. as student, administrator or faculty
<b><u>Benefit</u></b> Clear separation of roles ensures that students know exactly which tab they have to click to get to the login page
<b><u>Trade-offs</u></b> If the user does not notice the tabs, then they have no alternate mechanism to get to the login page. Some healthy redundancy might help here
<b><u>Relationships</u></b> HE2: Message on home page
<b><u>Submitted by</u></b> Sri Mandayam, Denis Parra

<b>HE2 -- Bad Feature</b>
<b><u>Name</u></b> Message on home page
<b><u>Evidence</u></b> <i>Heuristic: Provide shortcuts</i> The message is long and informational, but does not include any hyperlinks that can point the user to the next page.  <p>Welcome!</p> <p>Welcome to the <b>SIS CourseAgent</b>, the implementation at the School of Information Sciences of the <b>Adaptive Online Course Recommendation System</b>. SIS CourseAgent is special designed for students and faculties in the School of Information Sciences and is also available to the public who has interests in the courses offered at the School of Information Sciences.</p> <p><b>You could either visit our course catalog to get general information about courses offered in SIS or Login to our CourseAgent system to get more personalized information.</b></p> <hr/> <p>Copyright 2003 (c) School of Information Sciences, University of Pittsburgh Last updated: 08/25/2010 21:01:53 by SIS WebMaster courseagent.adm [AT] gmail [DOT] com</p>
<b><u>Explanation</u></b> People who wish to login or view the course catalog do not have any hyperlinks in the message that can easily redirect them to the concerned page
<b><u>Severity</u></b> Low: Although the hyperlinks at the top left of the page indicate how the user should proceed, their attention might be drawn to the message and they might be stuck on this screen for awhile
<b><u>Solution</u></b> Update the message to include hyperlinks to the course catalog and login page, based on user type (faculty, administrator, student)
<b><u>Relationships</u></b> HE1: Home Page HE24: Help file
<b><u>Submitted by</u></b> Sri Mandayam

## HE3 -- Bad Feature

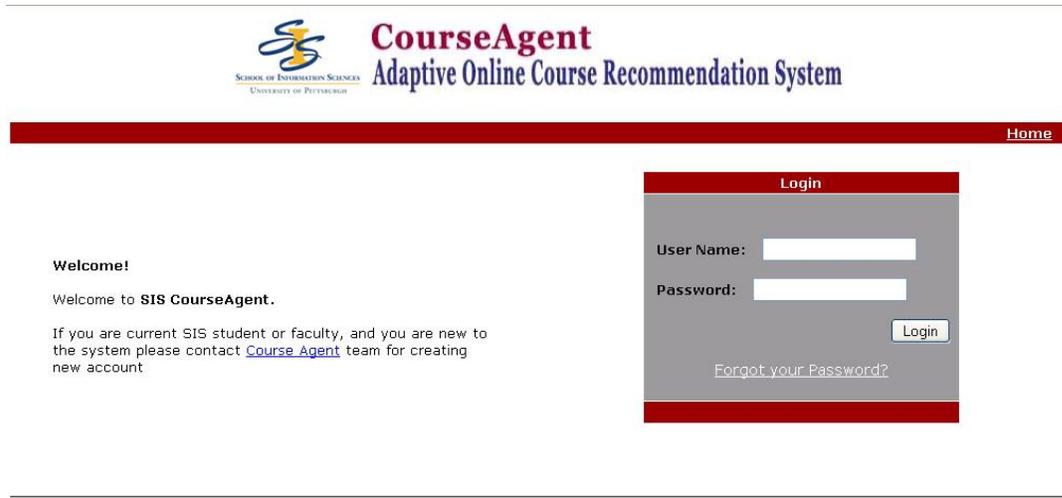
### Name

Creating an account

### Evidence

*Heuristic: Speak the user's language - Simple and natural dialog*

The user is told to contact Course Agent team for creating a new account.



### Explanation

The user has no way to start using the system right away because, against the convention in similar systems, there is no automatic process for creating an account.

### Severity

Moderate: User will have to leave the system, send an email, and wait for the admin to answer the email in order to use the system. This process discourages the users to use the system because it takes them away from the system and could take a lot of time.

### Solution

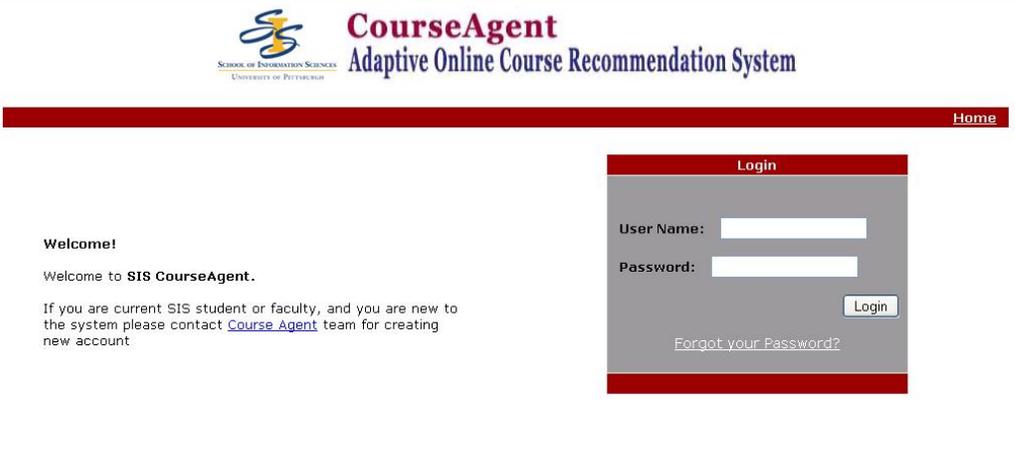
Create a method of verifying user's identity as a SIS student and make the sign-up process automatic and quick.

### Relationships

HE4: Alignment of fields on the login form

### Submitted by

Arash Farsi

<b>HE4 -- Bad Feature</b>
<b><u>Name</u></b> Alignment of fields on the login form
<b><u>Evidence</u></b> <i>Heuristic: Be consistent</i> "Password" field is not positioned directly below "User Name" field.  <p>The screenshot shows the CourseAgent login page. At the top, there is a red navigation bar with a 'Home' link. Below the navigation bar, the page content is split into two columns. The left column contains a 'Welcome!' message and instructions for new users. The right column contains a 'Login' form. The 'Login' form has two input fields: 'User Name' and 'Password'. The 'User Name' field is positioned above the 'Password' field, but they are not vertically aligned. The 'Password' field is shifted to the right relative to the 'User Name' field. A 'Login' button is located to the right of the 'Password' field. Below the 'Password' field, there is a link for 'Forgot your Password?'.</p>
<b><u>Explanation</u></b> The login form does not look good because of the problem in alignment.
<b><u>Severity</u></b> Low: User expects to see well-organized design for forms because it would be easier for the eye to follow from a field to the next.
<b><u>Solution</u></b> Align the fields.
<b><u>Relationships</u></b> HE3: Creating an account
<b><u>Submitted by</u></b> Arash Farsi

## HE5 -- Good Feature

### Name

Navigation bar and tabs

### Evidence

*Heuristic: Minimize user memory load*

The system uses graphical elements to indicate which tab and which page the user is currently viewing.



### Explanation

On the top bar, the active tab's borders are faded. On the bottom bar, the active page has a larger font size. Both features clearly indicate where the user is in the system.

### Benefit

The user does not have to memorize or double check to find out which page he/she is on.

### Trade-offs

The distinctions might not be noticed by some people because the system uses rather same colors.

### Relationships

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### Submitted by

Abdul Raqeeb Abdul Aziz, Arash Farsi, Sri Mandayam

<b>HE6 -- Bad Feature</b>
<b><u>Name</u></b> Naming convention for menu bar
<b><u>Evidence</u></b> <i>Heuristic: Speak the user's language</i> One of the tabs in the page is "Control Panel" which displays the account details of the user. 
<b><u>Explanation</u></b> The user may not understand the meaning of control panel when generally names like "My Account" or "Account Settings" is used for that purpose.
<b><u>Severity</u></b> Low: A user might be searching for the page that helps him change the password or his other details.
<b><u>Solution</u></b> The name of the tab could be changed to My Account or Account Settings to make it more meaningful.
<b><u>Relationships</u></b> ---
<b><u>Submitted by</u></b> Abdul Raqeeb Abdul Aziz

## HE7 -- Bad Feature

### Name

Confirmation for updating profile

### Evidence

*Heuristic: Provide feedback*

When the user clicks the Update button, the page refreshes but there is no message/confirmation that the update was successful or not.


**CourseAgent**  
 Adaptive Online Course Recommendation System

[Control Panel](#) | [Schedules](#) | [Career Scope](#) | [Course Catalog](#) | [Faculties](#) | [Register](#) | [Job Recommender](#)

[Profile](#) | [Taken Courses & Evaluation](#) | [Career Interests](#) | [Study Plan](#) | [Advisor](#)
Arash 's CourseAgent [Help](#) [Log out](#)

**My Profile**

Student ID	afarsi
Password	••••••••
Confirm Password	••••••••
First Name	Arash
Last Name	Farsi
Email	arashfarsi@gmail.com
Enrolled Program	IST
Degree	Master
Advisor	Stephen Hirtle
Start Term	09-2
Photo URL	

### Explanation

No feedback is provided to the user upon updating the profile. There is no way to find out if the updates were saved except clicking on “Profile” again to reload.

### Severity

Low: No information is passed to the user which could cause confusion.

### Solution

The system could generate a message in a line above “My Profile” or in a dialog box to let the user know what happened.

### Relationships

HE13: Feedback to evaluation

HE23: Register for courses

### Submitted by

Arash Farsi, Denis Parra

## HE8 -- Good Feature

### Name

List of courses in a semester

### Evidence

*Heuristic: Minimize user memory load*

The user can choose from a list what courses he/she has taken and does not need to type in the name of the courses.

**CourseAgent**  
Adaptive Online Course Recommendation System

Control Panel | Schedules | Career Scope | Course Catalog | Faculties | Register | Job Recommender

Profile | Taken Courses & Evaluation | Career Intrests | Study Plan | Advisor | Arash 's CourseAgent | Help | Log off

**My Taken Courses & Course Evaluation**

Select semester and year to view the schedule: Fall 2010 List

**Courses Taken (Evaluated Courses - Different shades show partial evaluation)**

CND	Title	Semester	Instructor
<input type="radio"/>	INFS CI 2000	10-2 -	
<input type="radio"/>	INFS CI 2150	11-1 -	
<input type="radio"/>	INFS CI 2350	10-2 -	
<input type="radio"/>	INFS CI 2470	11-1 -	
<input type="radio"/>	INFS CI 2560	10-2 -	
<input type="radio"/>	INFS CI 2801	11-1 -	
<input type="radio"/>	INFS CI 2955	10-2 -	
<input type="radio"/>	INFS CI 2980	11-1 -	

### Explanation

The system shows a list of courses for each semester so that the user can just pick the courses he/she has taken.

### Benefit

The list eliminates the need for the user to remember what were the exact titles of the courses. Students who look at this can easily select taken courses and evaluate them.

### Trade-offs

It might take a little while for the user to locate each course in the list, especially if it is toward the bottom of the list.

### Relationships

HE9: Selecting multiple courses

HE10: Navigating back to the list of taken courses

### Submitted by

Arash Farsi, Sri Mandayam

## HE9 -- Bad Feature

### Name

Selecting multiple courses

### Evidence

*Heuristic: Provide shortcuts - Minimize user memory load*

The user cannot select multiple courses from a semester's schedule to add to the "Courses Taken" list.

**CourseAgent Adaptive Online Course Recommendation System**

Control Panel | Schedules | Career Scope | Course Catalog | Faculties | Register | Job Recommender

Profile | Taken Courses & Evaluation | Career Intrests | Study Plan | Advisor | Arash 's CourseAgent | Help | Log off

**My Taken Courses & Course Evaluation**

Select semester and year to view the schedule: Fall 2010 List

**Courses Taken (Evaluated Courses - Different shades show partial evaluation)**

CNO	Title	Semester	Instructor
<input type="radio"/> INFSCI 2000	Intro to Information Science	10-2 -	
<input type="radio"/> INFSCI 2150	Introduction to Security	11-1 -	
<input type="radio"/> INFSCI 2350	Human Factors in Systems	10-2 -	
<input type="radio"/> INFSCI 2470	Interactive Systems Design	11-1 -	
<input type="radio"/> INFSCI 2560	Web Technologies and Standards	10-2 -	
<input type="radio"/> INFSCI 2801	Geographic Information Systems	11-1 -	
<input type="radio"/> INFSCI 2955	Special Topics: Systems	10-2 -	
<input type="radio"/> INFSCI 2980	Practicum	11-1 -	

### Explanation

Almost all users have taken more than one course in most semesters. But, for adding all of them to the list on the right, they have to select and add courses one by one from the list on the left which takes much more time than selecting and adding all at once.

### Severity

High: The time it takes for the user to add courses from one semester is considerably high. Adding to this problem is also the fact that the list refreshes with every "add" and the user has to scroll from beginning of the list again (this could take a separate UAR).

### Solution

Add the possibility of selecting multiple courses at once.

### Relationships

HE8: List of courses in a semester

### Submitted by

Abdul Raqeeb Abdul Aziz, Arash Farsi, Sri Mandayam

## HE10 -- Good Feature

### Name

Navigating back to the list of taken courses

### Evidence

*Heuristic: Provide clearly marked exits*

After viewing course information, navigating back to the list of courses is easy and nothing will be lost.


**CourseAgent**  
 Adaptive Online Course Recommendation System

[Control Panel](#) | [Schedules](#) | [Career Scope](#) | [Course Catalog](#) | [Faculties](#) | [Register](#)

Arash's CourseAgent [Log off](#)

[Back to Taken Courses](#)

General Information of Special Topics: Systems

Course No	Course Title	Credit	Description	Pre-requisite	Status
INFSCI 2955	Special Topics: Systems	3			

Jonathan Grady | James Joshi | Peter Brusilovsky | Roger Flynn | All

	Community Rating		User Rating
	Rating	# of votes	
Workload	1.0	1	
Career Interest			

Copyright 2003 (c) School of Information Sciences, University of Pittsburgh  
Last updated: 10/31/2010 10:33:00 by CourseAgent WebMaster

### Explanation

By selecting a course and clicking "Show Info", the user will go to a new page. After getting whatever information he/she needs or if there is nothing interesting on the page, going back is very easy; he/she just has to click the link on the top right corner of the page.

### Benefit

User does not lose any work and can get right back to what he was working on in the previous page.

### Trade-offs

No significant trade-offs

### Relationships

HE8: List of courses in a semester

HE16: Course information buttons

### Submitted by

Arash Farsi

<b>HE11 -- Bad Feature</b>				
<b>Name</b> Semester naming convention				
<b>Evidence</b> <i>Heuristic: Provide feedback - Speaking user language</i> Users may not understand the notation used to indicate Fall, Spring and summer terms				
<b>Courses Taken (Evaluated Courses - Different shades show partial evaluation)</b>				
	<b>CNO</b>	<b>Title</b>	<b>Semester</b>	<b>Instructor</b>
<input type="radio"/>	CS 2410	Computer Architecture	09-1 -	
<input type="radio"/>	CS 2510	Computer Operating Systems	09-1 -	
<input type="radio"/>	CS 2990	INDEPENDENT STUDY	09-1 -	
<input type="radio"/>	INFSCI 2000	Intro to Information Science	10-2 -	
<input type="radio"/>	INFSCI 2150	Introduction to Security	11-1 -	
<input type="radio"/>	INFSCI 2350	Human Factors in Systems	10-2 -	
<input type="radio"/>	INFSCI 2470	Interactive Systems Design	11-1 -	
<input type="radio"/>	INFSCI 2560	Web Technologies and Standards	10-2 -	
<input type="radio"/>	INFSCI 2710	Database Management	11-1 -	
<input type="radio"/>	INFSCI 2955	Special Topics: Systems	10-2 -	
<input type="button" value="Evaluate"/>				
<input type="button" value="Del"/>				
<input type="button" value="Add"/>				
<b>Explanation</b> The semester description is of the format "yy-tt-?" where yy indicates the year and tt indicates the term, and these aren't explained adequately				
<b>Severity</b> Low: Not very severe, but might confuse a user who does not understand the meaning of this notation				
<b>Solution</b> Provide an explanation, e.g. 09: Year and 1: Spring				
<b>Relationships</b> ---				
<b>Submitted by</b> Arash Farsi, Sri Mandayam				

<b>HE12 -- Bad Feature</b>
<b><u>Name</u></b> Prompting the user to select a course to evaluate
<b><u>Evidence</u></b> <i>Heuristic: Prevent Errors</i> When the user clicks the Evaluate button without selecting a course, the website opens a new page with no content. 
<b><u>Explanation</u></b> When the user clicks the Evaluate button in the Taken Courses and Evaluation page, the website does not prompt the user to select a course if the user has accidentally pressed the evaluate button without selecting a course.
<b><u>Severity</u></b> Low: A blank webpage is displayed with no error message. The user might not know what went wrong.
<b><u>Solution</u></b> This could be prevented by creating a pop up that requests the user to select a course or open the default (first) listed course.
<b><u>Relationships</u></b> ---
<b><u>Submitted by</u></b> Abdul Raqeeb Abdul Aziz

## HE13 -- Bad Feature

### Name

Feedback to evaluation

### Evidence

*Heuristic: Provide feedback*

Once the user completes entering the evaluation details, there is not feedback displayed when the save button is clicked.

The screenshot shows the 'Course Evaluation' page for the course 'INFSCI 2801 - Geographic Information Systems'. The page has a navigation bar with tabs: Control Panel, Schedules, Career Scope, Study Plan, Course Catalog, Faculties, and Register. Below this is a user profile bar for 'Abdul Raqeeb 's CourseAgent' with a 'Help' link. The main content area is titled 'Course Evaluation' and includes a 'Back to Taken Courses' link. The course name 'INFSCI 2801 - Geographic Information Systems' is displayed. The evaluation form consists of two sections: 1. 'Workload of the course:' with radio buttons for 'Low', 'Average', and 'High'. 2. 'How relevant is this course to each of your career goals:' with radio buttons for 'Irrelevant', 'Marginally Relevant', 'Relevant', 'Very Relevant', and 'Essential'. There are two rows of radio buttons for 'Career Goal' with 'Software Analyst' and 'Software Developer'. A 'Comments' text box and a 'Save' button are also present.

### Explanation

Once the user enters all the information in the course evaluation page and then clicks the Save button, the system does not inform the user that the information was updated in the machine. The user would be in dilemma as to whether all the setting were reset or saved.

### Severity

Moderate: The user might be confused as to whether the values were reset to blank or they were accepted by the system.

### Solution

Display a message stating the entered details were received and accepted by the system.

### Relationships

HE7: Confirmation for updating profile

HE23: Register for courses

### Submitted by

Abdul Raqeeb Abdul Aziz

## HE14 -- Bad Feature

### Name

Position of help/logoff links

### Evidence

*Heuristic: Be consistent*

The help/logoff links are not placed consistently across screens, as can be seen from the screenshots below.

The first screenshot shows a navigation bar with 'Profile | Taken Courses & Evaluation | Career Intrests | Study Plan | Advisor' on the left, 'Sriranjani 's CourseAgent' in the center, and 'Help' on the right. Below this is a 'Course Evaluation' section for 'INFSCI 2470 - Interactive Systems Design'. It features a progress indicator with three points: 1 (Low), 2 (Average), and 3 (High). The 'Help' link is positioned at the top right of the page.

The second screenshot shows the 'My Taken Courses & Course Evaluation' section. It includes a dropdown menu for 'Fall' and '2002', and a 'List' button. Below this is a table titled 'Courses Taken (Evaluated Courses - Different shades show partial evaluation)'. The 'Log off' link is positioned at the bottom right of the page.

### Explanation

The links Help and Logoff are not placed consistently in the same position, thereby leading to possible confusion for users

### Severity

Low: Although the hyperlinks are well demarcated and visible, users might click the wrong link by mistake

### Solution

Make the postion of the links consistent

### Relationships

---

### Submitted by

Sri Mandayam

## HE15 -- Good Feature

### Name

List of career goals

### Evidence

*Heuristic: Speak the user's language*

The list is almost all-inclusive and gives many options to the users.

The screenshot displays the CourseAgent Adaptive Online Course Recon interface. At the top, there is a navigation menu with buttons for Control Panel, Schedules, Career Scope, Course Catalog, Faculties, Register, and Job Recommender. Below this is a red navigation bar with links for Profile, Taken Courses & Evaluation, Career Intrests, Study Plan, and Advisor. The main content area is titled "Career Goal" and features a "Career Goals" section. This section contains a list of job titles: Client/Server Programmer, College Professor, Data Warehouse Specialist, Database Administrator, Database Analyst, Database Developer, Database Specialist, and Digital Libraries Professional. To the right of the list are "ADD" and "DEL" buttons. Below the list is a "Show me Related Jobs" button. At the bottom of the page, there is a copyright notice: "Copyright 2003 (c) School of Information Sciences, Univer Last updated: 10/31/2010 11:52:19 by CourseAgent".

### Explanation

A comprehensive list has been put together in an effort to cover every possible job title in the areas relevant to SIS graduates. The used terms come directly from the IT industry.

### Benefit

The users can select exactly what they are looking for and not just something close to it.

### Trade-offs

Some users might get confused by different career goals that are very similar. Also, the list could get a bit long if more areas are going to be added.

### Relationships

HE16: Course information buttons

### Submitted by

Arash Farsi

## HE16 -- Bad Feature

### Name

Course information buttons

### Evidence

*Heuristic: Be consistent*

The location of the button and its text are different in two sections (Taken Courses & Evaluation - Study Plan)

Profile | [Taken Courses & Evaluation](#) | [Career Intrests](#) | [Study Plan](#) | [Advisor](#)

**My Taken Courses & Course Evaluation**

Select semester and year to view the schedule: Fall 2010 List

- CS 2012 -Algorithms Design [Pak Puha]
- CS 2005 -DATABASE MANAGEMENT SYSTEMS [Alexandros Labridis]
- CS 2110 -THEORY OF COMPUTATION [Pak Puha]
- CS 2222 -Research topics in CS [Yousuo Zhang]
- CS 2410 -Computer Architecture [Sangyeon Cho]
- CS 2510 -Computer Operating Systems [Daniel Mosse]
- CS 2530 -Computer and Network Security [Unknown]
- CS 2620 -INTERDISCIPLINARY MODELING AND VISUALIZATION [Lu Hual]
- CS 2710 -FOUNDATIONS OF ARTIFICIAL INTELLIGENCE (ISSP 2160) [Diane Utman]
- FTD J 0000 -Full-Time Dissertation [Unknown]
- INFSCI2000 -Intro to Information Science [Paul Harno]
- INFSCI2040 -Research Design [Harek Druzdzel]
- INFSCI2150 -Introduction to Security [James Joshi]
- INFSCI2170 -Cryptography [Richard Thompson]
- INFSCI2220 -Information Policy [D. Boveker]

Show Info Del Add

---

Profile | [Taken Courses & Evaluation](#) | [Career Intrests](#) | [Study Plan](#) | [Advisor](#)

**My Study Plan**

**Not planned Courses** Plan

- CS 2012 -Algorithms Design
- CS 2045 -INTRODUCTION TO HIGH PERFORMANCE COMPUTING SYSTEMS
- CS 2005 -DATABASE MANAGEMENT SYSTEMS
- CS 2110 -THEORY OF COMPUTATION
- CS 2150 -DESIGN AND ANALYSIS OF ALGORITHMS
- CS 2210 -Compiler Design
- CS 2222 -Research topics in CS
- CS 2310 -SOFTWARE ENGINEERING
- CS 2410 -Computer Architecture

View Course Information

### Explanation

Since both buttons take the user to the same page, they should be consistent in every aspect. But, one button has the words “Show Info”, while the other has “View Course Information”. Also, one is centered below the list of courses, but the other appears on the bottom right corner of the list.

### Severity

Low: This problem might give the impression that the two buttons actually have different functions.

### Solution

Edit the button to look the same everywhere in the system.

### Relationships

HE10: Navigating back to the list of taken courses

HE15: List of career goals

### Submitted by

Arash Farsi

## HE17 -- Good Feature

### Name

Career-related courses

### Evidence

*Heuristic: Simple and natural dialog*

The system allows each career goal title to be expanded/collapsed to allow users to view courses in Taken, Planned and Recommended category.

Progress ( Taken, Planned, Recommended)

-Graphical User Interface (GUI) Programmer

Taken Courses			
Course Number	Course Title	My Rating	Action
INFSCI 2000	Intro to Information Science	☆☆☆☆☆	Evaluated
INFSCI 2150	Introduction to Security	☆☆☆☆☆	Evaluated
INFSCI 2350	Human Factors in Systems	☆☆☆☆☆	Evaluated
INFSCI 2470	Interactive Systems Design	☆☆☆☆☆	Evaluated
INFSCI 2560	Web Technologies and Standards		Evaluate It!
INFSCI 2801	Geographic Information Systems		Evaluate It!
INFSCI 2955	Special Topics: Systems	☆☆☆☆☆	Evaluated
INFSCI 2980	Practicum		Evaluate It!

Recommended Courses			
Course Number	Course Title	Community Rating	Action
INFSCI 2510	Information Systems	☆☆☆☆☆	Add to Study Plan
INFSCI 2511	Information Systems Analysis, Design, and Evaluation	☆☆☆☆☆	Add to Study Plan
INFSCI 2550	Client-Server Systems	☆☆☆☆☆	Add to Study Plan
INFSCI 2780	Interactive Graphics	☆☆☆☆☆	Add to Study Plan

### Explanation

The 'plus' sign at the beginning of each career goal title indicates that the user can expand this to view content, and vice versa for the minus sign. The tabular format of the page with the distinction in colors provides the user with all the relevant information the system has regarding a career goal, all at just a glance.

### Benefit

Students who look at this get a clear picture of the courses that they have taken and could be taking to achieve their respective career goals.

### Trade-offs

Although all the courses that the user has taken are displayed for comparison purposes, this could make the first table long and cluttered when the user nears graduation because there could be a lot of courses on the table at that point.

### Relationships

---

### Submitted by

Arash Farsi, Sri Mandayam

## HE18 -- Good Feature

### Name

Course Catalog

### Evidence

*Heuristic: Simple and natural dialog*

The system clearly specifies to the user what the effect of each action is, and what the meaning of the content they see on the screen is

#### Course Catalog

Please select one of the programs to view the course list:

(Click on each "AREA" to see the list of related courses)

[Taken Courses](#), [Planned Courses](#), [Currently Taken Courses](#), : Recommend by Advisor, : Degree of Relevance to Career Goals

#### -Cognitive Science Area

Course No	Course Title	Workload	Relevance	Action
<a href="#">INFSCI 2300</a>	Human Information Processing		   	<a href="#">Plan It</a>
<a href="#">INFSCI 2330</a>	Foundations of Cognitive Science			<a href="#">Plan It</a>
<a href="#">INFSCI 2350</a>	Human Factors in Systems		 	<a href="#">Leave Feedback</a>

#### +Cognitive Systems Area

#### +Doctoral Courses

#### +Doctoral Seminars

#### +Electives Area

### Explanation

The message at the beginning of the course catalog section indicates what actions on the part of the user will generate what output, and what each column on the output indicates

### Benefit

Students who look at this get a clear picture of the courses that they have taken, planned and should be taking to achieve their respective career goals

### Trade-offs

If the user has multiple career goals, it may not be very clear as to which career goal the courses listed are most relevant to

### Relationships

HE19: Work load display

### Submitted by

Sri Mandayam

## HE19 -- Good Feature

### Name

Work load display

### Evidence

*Heuristic: Simple and natural dialog*

The indication of the work load displayed with the help of the number of shovels would mean the intensity of the work that the subject has to offer.

Course No	Course Title	Workload	Relevance	Action
<a href="#">INFSCI 2410</a>	Introduction to Neural Networks			<a href="#">Plan It</a>
<a href="#">INFSCI 2420</a>	Natural Language Processing			<a href="#">Plan It</a>
<a href="#">INFSCI 2440</a>	Artificial Intelligence			<a href="#">Plan It</a>
<a href="#">INFSCI 2470</a>	Interactive Systems Design			<a href="#">View Feedback</a>
<a href="#">INFSCI 2460</a>	Spatial Reasoning for GIS			<a href="#">Plan It</a>

### Explanation

The students who refer this can relate the workload to the effort that they would need to put into the subject.

### Benefit

Helps and informs the user about the workload in a very visual way.

### Trade-offs

If the user doesn't know or is not able to relate shovel and hard work associated to it, this feature would lead to confusion.

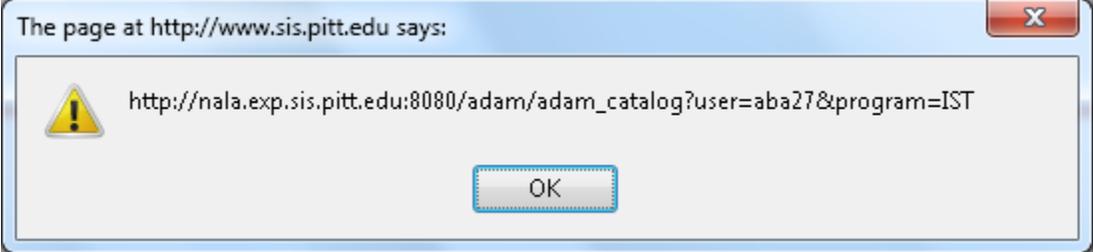
### Relationships

HE18: Course Catalog

### Submitted by

Abdul Raqeeb Abdul Aziz

<b>HE20 -- Good Feature</b>
<b><u>Name</u></b> Maintaining button consistency
<b><u>Evidence</u></b> <i>Heuristic: Be consistent</i> The creator has placed the buttons consistently easing the user's effort to use them. Please select the program, semester, and the year to view the schedule:  <input type="text" value="Information Science"/> <input type="text" value="Fall"/> <input type="text" value="2002"/> <input type="button" value="List"/> <input type="button" value="Visualize"/>  <b>Course Catalog</b>  Please select one of the programs to view the course list: <input type="text" value="Course in IST Program"/> <input type="button" value="List the Courses"/> <input type="button" value="Visualize"/>
<b><u>Explanation</u></b> The users can directly point to the right most button every time they want to use visualize functionality.
<b><u>Benefit</u></b> User does not have to think twice before clicking the button in view of losing data or navigating through the wrong option.
<b><u>Trade-offs</u></b> If the button positioning is swapped in other similar websites and if the user is used to such a configuration, the user might have difficulty in using this system for a while.
<b><u>Relationships</u></b> HE21: Error message for "Visualize" button
<b><u>Submitted by</u></b> Abdul Raqeeb Abdul Aziz

<b>HE21 -- Bad Feature</b>
<b><u>Name</u></b> Error message for “Visualize” button
<b><u>Evidence</u></b> <i>Heuristic: Good error messages</i> If the “Visualize” button is clicked an error message pops up which does not have any solution to the error. 
<b><u>Explanation</u></b> When the user clicks the visualize button in the Course Catalog webpage such an error pops up.
<b><u>Severity</u></b> High: User does not get any result and has no idea what went wrong.
<b><u>Solution</u></b> The error message should be meaningful to guide the user to resolve the issue.
<b><u>Relationships</u></b> HE20: Maintaining button consistency
<b><u>Submitted by</u></b> Abdul Raqeeb Abdul Aziz

<b>HE22 -- Bad Feature</b>
<b>Name</b> Instructions in "Register" tab
<b>Evidence</b> <i>Heuristic: Minimize user memory load</i> The instructions displayed under the Register tab.  <small>The registration section is designed to help you filling out your registration form. First you need to select for which semester you want to do the registration. Your pre-planned courses that are being offered in the chosen semester will be added to your selected courses for registration by default. <b>Planned courses are specified with blue background.</b> If you have already registered any courses for the selected semester, those courses are going to be selected in the list as well. <b>Previously registered courses are specified with pink background.</b> You can deselect any course that you are not planning to register for the current semester. When you click on "Register" or "Update Registration" button, the schedule will be updated to show you currently taken courses and your planned courses.</small>
<b>Explanation</b> The steps described the way the Register page needs to be used is not instruction wise but is like a paragraph.
<b>Severity</b> Low: The user would not be able to reach to the last instruction unless he/she reads quickly. This might end up straining the user to use the Register functionality.
<b>Solution</b> The instructions could have been displayed using bullets or numbering.
<b>Relationships</b> HE23: Register for courses
<b>Submitted by</b> Abdul Raqeeb Abdul Aziz

## HE23 -- Bad Feature

### Name

Register for courses

### Evidence

*Heuristic: Provide feedback*

When users don't select any course and try to register, they are redirected to the same page, but with no warning or error message

**CourseAgent**  
Adaptive Online Course Recommendation System

Control Panel | Schedules | Career Scope | Course Catalog | Faculties | **Register** | Job Recommender

Help Log off

The registration section is designed to help you filling out your registration form. First you need to select for which semester you want to do the registration. Your pre-planned courses that are being offered in the chosen semester will be added to your selected courses for registration by default. **Planned courses are specified with blue background.** If you have already registered any courses for the selected semester, those courses are going to be selected in the list as well. **Previously registered courses are specified with pink background.** You can deselect any course that you are not planning to register for the current semester. When you click on "Register" or "Update Registration" button, the schedule will be updated to show you currently taken courses and your planned courses.

Please select the program and current semester: Information Science ▾ Fall ▾ 2010 ▾ Show Courses

View My Registration Form Register

Select	Course No	Course Title	Instructor	Workload	Day	Time
<input type="checkbox"/>	INFSCI 2000	Intro to Information Science	Paul Munro	3	Monday	6 - 8:50

### Explanation

When users don't select any course and try to register, they are redirected to the register page, without saying what happened (silent failure)

### Severity

Moderate: User might not notice that no course was selected or could get confused.

### Solution

Provide a message saying user has to select a course to register

### Relationships

HE7: Confirmation for updating profile

HE13: Feedback to evaluation

HE22: Instructions in "Register" tab

### Submitted by

Sri Mandayam

## HE24 -- Bad Feature

### Name

Help document

### Evidence

*Heuristic: Provide shortcuts*

The help portion is one single long page with no navigation bar and no connection back to the main system.



**CourseAgent**  
Adaptive Online Course Recommendation System

**Course Agent**

Welcome to the SIS CourseAgent: Adaptive Online Course Recommendation System.

SIS CourseAgent is specially designed for students and faculties in the School of Information Sciences and is also available to the public who has interests in the courses offered at the School of Information Sciences.

The SIS CourseAgent is a good tool to give you recommendation on courses that might interest you or has the most benefit to you. Based on advisor's recommendation and students' evaluations about each course, you could have a snapshot about what courses are useful for you according to your personal career goals and your progress of taking courses relevant to your personal career goals.

**Table of Contents**

- [Control Panel](#)
  - [Profile](#)
  - [Taken Courses and Evaluation](#)
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- [Course Scope](#)
- [Course Catalog](#)
- [Faculties](#)
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- [Need More Help](#)

**Control Panel**

[Profile](#)

### Explanation

When the user requires help on a specific part of the system, he/she will be presented with the whole help document, which is not easy to read and provides no link back to the system.

### Severity

High: This problem may slow down the users and frustrate them. Also, it is very likely that some users cannot find what they are looking for, especially if the system is going to expand to have more features and functions and thus, a larger help document.

### Solution

Provide section-specific help with itemized lists, possibly FAQs, and links to relevant parts of the system. Also, help could appear in a pop-up window.

### Relationships

HE2: Message on home page

### Submitted by

Arash Farsi

## II. Administrator Interface:

<b>HE25 -- Bad Feature</b>
<b><u>Name</u></b> Main menu options
<b><u>Evidence</u></b> <i>Heuristic: Minimize user memory load</i> The selection of one of the options in the administration menu is difficult.  <small><a href="#">Edit Students' Information</a>   <a href="#">Add Students</a>   <a href="#">Delete Students</a>   <a href="#">Edit Schedule's Information</a>   <a href="#">Print/View Schedule's Information</a>   <a href="#">Add New Courses</a>   <a href="#">Rename Courses</a>   <a href="#">Edit Course Catalog</a>   <a href="#">Add New Faculty</a>   <a href="#">Edit Faculty</a>   <a href="#">Set Current Semester</a>   <a href="#">Send Email</a></small>
<b><u>Explanation</u></b> The administrator must read each option in order to select the correct one for the task she will perform.
<b><u>Severity</u></b> Low: Spending additional time to select the right option.
<b><u>Solution</u></b> The menu should be categorized in Courses, Students, Faculty and Schedule. Inside each category should be displayed the more specific options.
<b><u>Relationships</u></b> HE26: Main menu in "Add Student" HE29: Additional options in the menu
<b><u>Submitted by</u></b> Denis Parra

## HE26 -- Bad Feature

### Name

Main menu in "Add Student"

### Evidence

*Heuristic: Be consistent*

When the administrator selects the option "Add student" the main menu is lost, as seen in the red-background bar



### Explanation

All the scripts in the administration section always show the main menu to facilitate the navigation to other options. This consistency is lost in the case of "Add Student"

### Severity

High: Administrator doesn't know how to come back to main menu or to select other options.

### Solution

The main menu should be displayed in order to keep consistency and facilitate the navigation.

### Relationships

HE25: Main menu options

HE29: Additional options in the menu

### Submitted by

Arash Farsi, Denis Parra

## HE27 -- Bad Feature

### Name

Log out

### Evidence

*Heuristic: Provide clearly marked exits*

Option to log out or close the administration session

[Edit Students' Information](#) | [Add Students](#) | [Delete Students](#) | [Edit Schedule's Information](#) | [Add New Course](#) | [Rename Course](#) | [Edit Course Catalog](#) | [Add New Faculty](#) | [Edit Faculty](#)

#### Edit Course Areas

Select the Program IST

Select Program

Electives Area

Select Course Area

Action	Course Numebr
	INFSCI 2902
	INFSCI 2904
	LIS 2184
	LIS 2194
	TELCOM 2200
	TELCOM 2510
Add	CS 2012

### Explanation

There is no option in the menu to logout or close the session, what can compromise security.

### Severity

High: Administrator can compromise security of the system if she works in a workstation different than her own, by leaving the session open. As this is a web system, it is a feasible possibility.

### Solution

Main menu should have an option to log out and close the session.

### Relationships

---

### Submitted by

Arash Farsi, Denis Parra

## HE28 -- Good Feature

### Name

Update Button

### Evidence

*Heuristic: Provide Shortcuts*

Button update at the left side of each student in the "Edit student's information" page

[Edit Students' Information](#) | [Add Students](#) | [Delete Students](#) | [Edit Schedule's Information](#) | [Print/View Schedule's Inf](#)  
[New Course](#) | [Rename Course](#) | [Edit Course Catalog](#) | [Add New Faculty](#) | [Edit Faculty](#)

#### Edit Student

	Action	Student ID	Password	Firstname	Lastname	Email	Enrolled Program	Degre
<a href="#">Edit</a> <a href="#">Taken</a> <a href="#">Courses</a> <a href="#">Edit</a>	Update	lmao	●●●●●●●●	Li-Chen	Mao	maolichen@hotmail.com	IST	Master

### Explanation

The button located on the left side of each row that presents the user information eases the process of updating user information.

### Benefit

Prevents the administrator of doing additional steps in order to update information of specific users.

### Trade-offs

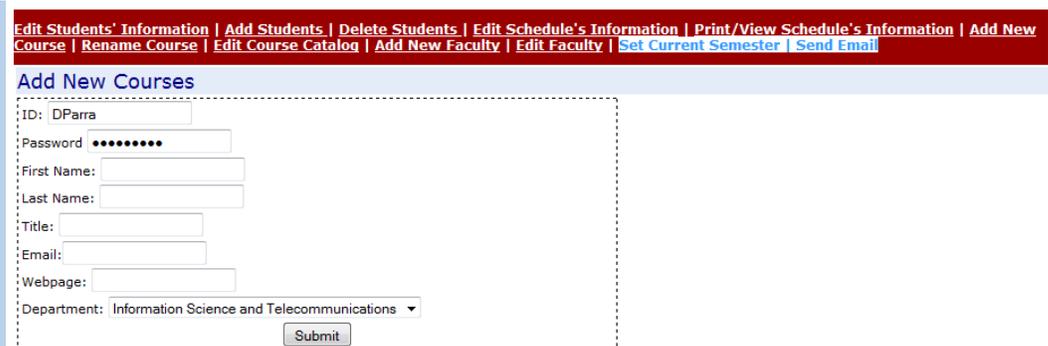
It doesn't have an message confirming that the administrator really wants to update that user's information, what can lead to picking the wrong user.

### Relationships

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### Submitted by

Denis Parra

<b>HE29 -- Bad Feature</b>
<b><u>Name</u></b> Additional options in the menu
<b><u>Evidence</u></b> <i>Heuristic: Be consistent</i> Options "Set Current Semester" and "Send Email"
 A screenshot of a web application interface. At the top, a red navigation bar contains several menu items: "Edit Students' Information", "Add Students", "Delete Students", "Edit Schedule's Information", "Print/View Schedule's Information", "Add New Course", "Rename Course", "Edit Course Catalog", "Add New Faculty", "Edit Faculty", "Set Current Semester", and "Send Email". Below this bar, a blue header reads "Add New Courses". Underneath, a form is displayed with fields for "ID:" (containing "DParra"), "Password" (masked with dots), "First Name:", "Last Name:", "Title:", "Email:", and "Webpage:". A "Department:" dropdown menu is set to "Information Science and Telecommunications". A "Submit" button is located at the bottom of the form.
<b><u>Explanation</u></b> The options "Set Current Semester" and "Send Email" does not appear always in the main menu. This lack of consistency makes the administrator to unnecessarily jump to different pages in order to select one of those options.
<b><u>Severity</u></b> Low: This feature is not of big severity, but adds difficulty to find some options of administration.
<b><u>Solution</u></b> Make sure that both options "Set Current Semester" and "Send Email", are always present in the main menu.
<b><u>Relationships</u></b> HE25: Main menu options HE26: Main menu in "Add Student"
<b><u>Submitted by</u></b> Arash Farsi, Denis Parra

## HE30 -- Bad Feature

### Name

SQL code as result of the action

### Evidence

*Heuristic: Speak the user's language*

SQL code displayed as a result of updating a record in the DB

[Edit Students' Information](#) | [Add Students](#) | [Delete Students](#) | [Edit Schedule's Information](#) | [Print/View Schedule's Information](#) | [Add New Course](#) | [Rename Course](#) | [Edit Course Catalog](#) | [Add New Faculty](#) | [Edit Faculty](#)

```
update tbl_schedule set crn=16266, crn2=07116266, day='appointment', time='', location='', instructor='unknown ', courseweb='', p_id='TELCOM ', duration='semester ', date_modified='', note='Pre: Advanced Standing,' where c_no='TELCOM 2941 ' and t_id='07-1'
```

#### Edit Schedule

Select the semester and the year: Fall 2006

Action	CRN	Course No	Course Title	Day	Time	Location	Instructor	CourseWeb	Dur
<input type="button" value="Update"/>	21029	CS 2110	THEORY OF COMPUTATION	Tue/Th	05:30 PM - 0	SENSQ	Robert P. Daley		

### Explanation

SQL code is displayed after confirming that a course has been added or updated in the schedule.

### Severity

Moderate: Although this could be seen as the language of the user (the administrator), sometimes this same interface is used by non-administrators to add new courses to the schedule of one term. The potential risk of showing a query that gives hints of the status of the DB is dangerous.

### Solution

The administrator can think of the SQL information as useful to debug, but if there are other users using the same interface, this information should not be displayed. Other option is to create the notion of roles in administration, in such a way that the one who just enter information doesn't need to see that message

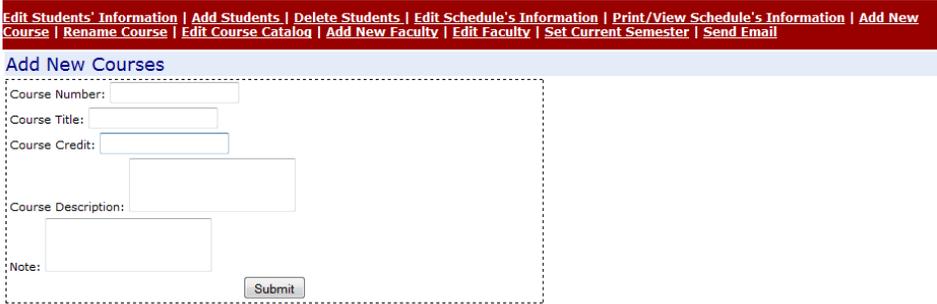
### Relationships

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### Submitted by

Denis Parra

<b>HE31 -- Bad Feature</b>						
<b>Name</b> Course Schedule						
<b>Evidence</b> <i>Heuristic: Provide Feedback</i> Page displaying the whole course schedule for one specific term.						
<b>Course Schedule</b>						
<b>Schedule for the fall , 2010 semester (11-1). Semester begins: , Semester ends:</b>						
Primary Academic Code for MSIS, CASIS, Ph.D IS/Telcom 940835						
<b>No</b>	<b>Course Title</b>	<b>Day</b>	<b>Time</b>	<b>Location</b>	<b>Instructor</b>	<b>Duration</b>
1	Alhrorithm Design	mwf	03:00 PM - 04:15 PM	ENSQ 5129	Kirk Pruhs	semester
2	DATABASE MANAGEMENT SYSTEMS	tue_thu	02:30 PM - 03:45 PM	SENSQ 5129	Alexandros Labrinidis	semester
3			01:00 PM - 02:15 PM	SENSQ		
<b>Explanation</b> The information of beginning and end of the semester is not displayed and there is no feedback to the user in order to know why is that information not displayed..						
<b>Severity</b> Low: Is not really severe since this information can be found in other pages of the University, but it discourages the user about trusting the system.						
<b>Solution</b> Make sure that the information is added in the DB.						
<b>Relationships</b> ---						
<b>Submitted by</b> Denis Parra						

<b>HE32 -- Bad Feature</b>
<b><u>Name</u></b> Add new course
<b><u>Evidence</u></b> <i>Heuristic: Prevent errors</i> Form of the page "Add New Courses" 
<b><u>Explanation</u></b> When the administrator fills the information to add a new course, the system doesn't provide a way to prevent her of making some errors, like adding a number of credits out of the norm.
<b><u>Severity</u></b> Moderate: In some of the recommendation mechanisms of the system, this information could be used to calculate work load.
<b><u>Solution</u></b> Provide a mechanism, either client or server side, to prevent the administrator to make an error when entering course credit or course number.
<b><u>Relationships</u></b> ---
<b><u>Submitted by</u></b> Denis Parra

## HE33 -- Bad Feature

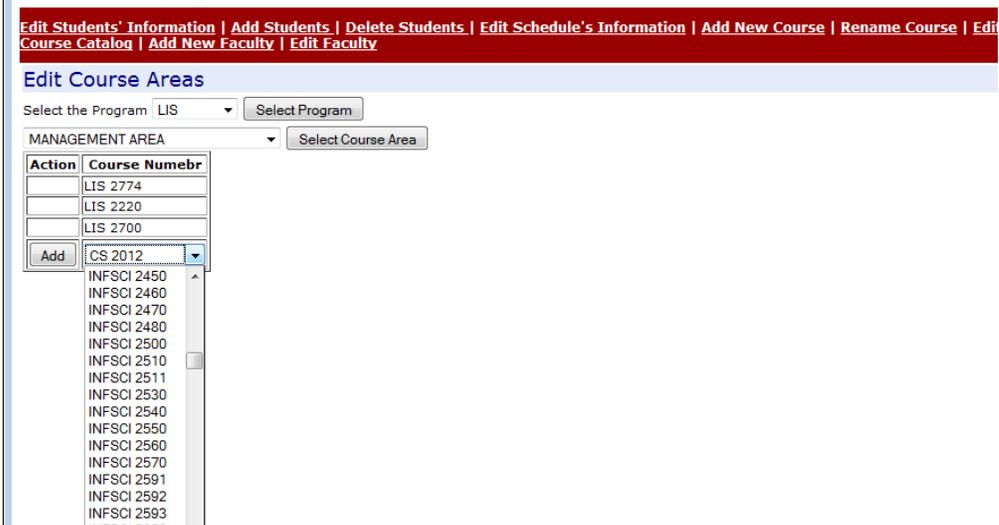
### Name

Course list in combo box

### Evidence

*Heuristic: Minimize user memory load*

List of courses displayed in combo box in section "Edit Course Areas"



### Explanation

When the administrator wants to add courses to some specific area, a combo box with the list of all available courses in the system is displayed. This list is very long and it makes difficult to select one course without knowing exactly the course code.

### Severity

Moderate: It can lead to additional time or mistakes in order to select the right course.

### Solution

Change the component for one that can assist the user to select courses by filtering the field (CS, INFSCI, TELCOM) and then numbers. Also, add the chance to fin the course by title or by instructor.

### Relationships

---

### Submitted by

Denis Parra

## HE34 -- Good Feature

### Name

Consistency of terms

### Evidence

*Heuristic: Be consistent*

Headers and the names of the fields in forms.

[Idents](#) | [Edit Schedule's Information](#) | [Print/View Schedule's Information](#) | [Add New Faculty](#) | [Edit Faculty](#)

Firstname	Lastname	Email	Enrolled Program	Degree	Advisor	Start Term	Expected End Term
Li-Chen	Mao	maolichen@hotmail.com	IST	Master	Peter Brusilovsky	03-2	04-2
Derek	Pawlikowsky	DJP14@pitt.edu	IST	Master	Michael Spring	03-1	08-2

**Add Student**

Userid:

Firstname:

Lastname:

Email:

Enrolled Program:

Degree:

Advisor:

Start Term:

Expected End Term:

### Explanation

The headers and names of the fields in forms are consistent, which helps to filter and identify information.

### Benefit

Facilitate the administration by providing a common vocabulary to identify different entities.

### Trade-offs

Consistency can lead sometimes to difficulty in displaying some terms, like "Expected End Term" as header of the table.

### Relationships

---

### Submitted by

Denis Parra

### III. Summary

In this section, we summarize the heuristic evaluation using a table. In the table, we use the following numbers for the nine heuristics:

1. **Simple and natural dialog**
2. **Speak the user's language**
3. **Minimize user memory load**
4. **Be consistent**
5. **Provide feedback**
6. **Provide clearly marked exits**
7. **Provide shortcuts**
8. **Good error messages**
9. **Prevent errors**

Also, (+) denotes a good feature, while a (-) would indicate a bad feature (problem). Severity levels are as follows:

1. Low
2. Moderate
3. High

Obviously, severity does not apply to good features.

ID and Name	Heuristic	Good/Bad Feature	Severity
<b><u>Student Interface</u></b>			
HE1: Home page	1	(+)	-
HE2: Message on home page	7	(-)	1
HE3: Creating an account	1-2	(-)	2
HE4: Alignment of fields on the login form	4	(-)	1
HE5: Navigation bar and tabs	3	(+)	-
HE6: Naming convention for menu bar	2	(-)	1
HE7: Confirmation for updating profile	5	(-)	1
HE8: List of courses in a semester	3	(+)	-
HE9: Selecting multiple courses	3-7	(-)	3
HE10: Navigating back to the list of taken courses	6	(+)	-
HE11: Semester naming convention	2-5	(-)	1

## Heuristics Evaluation Project - Course Agent

HE12: Prompting the user to select a course to evaluate	9	(-)	1
HE13: Feedback to evaluation	5	(-)	2
HE14: Position of help/logoff links	4	(-)	1
HE15: List of career goals	2	(+)	-
HE16: Course information buttons	4	(-)	1
HE17: Career-related courses	1	(+)	-
HE18: Course Catalog	1	(+)	-
HE19: Work load display	1	(+)	-
HE20: Maintaining button consistency	4	(+)	-
HE21: Error message for "Visualize" button	8	(-)	3
HE22: Instructions in "Register" tab	3	(-)	1
HE23: Register for courses	5	(-)	2
HE24: Help document	7	(-)	3
<b><u>Administrator Interface</u></b>			
HE25: Main menu options	3	(-)	1
HE26: Main menu in "Add Student"	4	(-)	3
HE27: Log out	6	(-)	3
HE28: Update Button	7	(+)	-
HE29: Additional options in the menu	4	(-)	1
HE30: SQL code as result of the action	2	(-)	2
HE31: Course Schedule	5	(-)	1
HE32: Add new course	9	(-)	2
HE33: Course list in combo box	3	(-)	2
HE34: Consistency of terms	4	(+)	-

Now we start to do a few analyses on the data in the above table. Please note that any conclusion we make is only based on a limited number of observers and UARs.

We will focus on the bad features first. If we break down the problems by heuristics and student/admin interfaces, we get the following numbers:

1. **Simple and natural dialog**
  - Student: 1 Moderate
2. **Speak the user's language**
  - Student: 2 Low, 1 Moderate - Admin: 1 Moderate
3. **Minimize user memory load**
  - Student: 1 Low, 1 High - Admin: 1 Low, 1 Moderate
4. **Be consistent**
  - Student: 3 Low - Admin: 1 Low, 1 High
5. **Provide feedback**
  - Student: 2 Low, 2 Moderate - Admin: 1 Low
6. **Provide clearly marked exits**
  - Admin: 1 High
7. **Provide shortcuts**
  - Student: 1 Low, 2 High
8. **Good error messages**
  - Student: 1 High
9. **Prevent errors**
  - Student: 1 Low - Admin: 1 Moderate

So, on the student interface, heuristics “Provide feedback” and “Provide shortcuts” have the highest number of problems related to them. On the administrator interface, the problems are mostly related to “Minimize user memory load” and “Be consistent”. If we take an aggregative look at both interfaces, considering those four heuristics has the highest priority when trying to enhance the design.

From another point of view, when we look at the good features, there is no UAR that points to these heuristics: “Provide feedback”, “Good error messages”, and “Prevent errors”. It could mean that the designers would have to pay more attention to the importance of these heuristics to improve the interfaces.