

Course Agent

Adaptive Online Course Recommendation System

Independent Study Report 2013 Fall

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Part I. Introduction to Course Agent

Course Agent is the new implementation at the School of Information Sciences of the Adaptive Online Course Recommendation System. It 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.

For students, this system can give suggestions on what courses to take after knowing their career goal. And it can provide the information of workload, ratings and also relevance of each course helping students make better decisions on planning their study. Based on the recommendations from similar students and also the evaluations from faculty, students can find the information they need easily. Also the system can tell students their career progress based on they course they took, it's clear to see what courses do they need to achieve their career goal.

But currently the system is lacking of administrator functions. This project aims to build up an administrator end to manage students, faculties and courses information. Also staffs can edit course schedule information and semester information from the system. Then it can have more accurate and current information for both students and faculty. Plus, it can deal with uploaded files when adding students or graduation students, which can save a lot of effort for staff.

Part II. Technical Detail of Course Agent:

Development Environment and Techniques:

1. PHP
2. MySQL
3. Apache Server
4. jQuery and AJAX

Deploying Environment:

For local user: Apache Server (localhost)

For remote server user: <http://halley.exp.sis.pitt.edu/courseagent/v3/index.php>

Part III. System Overview:

1. Students:

1) Edit Students Account:

Choose student:



The screenshot displays the 'Course Agent Administration' web interface. At the top, there is a dark blue header with the text 'Course Agent Administration' and 'Adaptive Online Course Recommendation System' below it. A light blue navigation bar contains several menu items: 'Students', 'Courses', 'Schedule', 'Faculty', and 'Research Set Up'. The main content area is light blue and features a search form for students. The form has a label 'Student Name:' followed by a text input field containing the text 'zai'. Below the input field, a dropdown menu is open, showing three suggestions: 'Ahmadzai Sahib', 'Ahmadzai Sahib', and 'Alenezi Zaidan'. To the right of the input field is a 'Submit' button. At the bottom of the page, there is a footer with the text: 'Course Agent is developed by PAWS Lab', 'School of Information Sciences', 'University of Pittsburgh', and 'The design of this page is adapted from phpform.org'.

Click “Edit Accounts” under Students, input the name of a students (Last Name First Name), then the autocomplete function will give hints about student’s name, administrator can choose the name from list. Since there will be thousands of students, if trying to find one student from a drop down list, it’s easy to make mistakes and also a waste of time.

After choosing students, click the Submit button, student's information will show as below:

Course Agent Administration

Adaptive Online Course Recommendation System

Students ▾ Courses ▾ Schedule ▾ Faculty ▾ Research Set Up ▾

Student Name:

Personal Information

ID:

Password:

Peoplesoft Number:

First Name:

Last Name:

Email:

Picture URL:

Academic Information

Advisor: ▾

Program: ▾

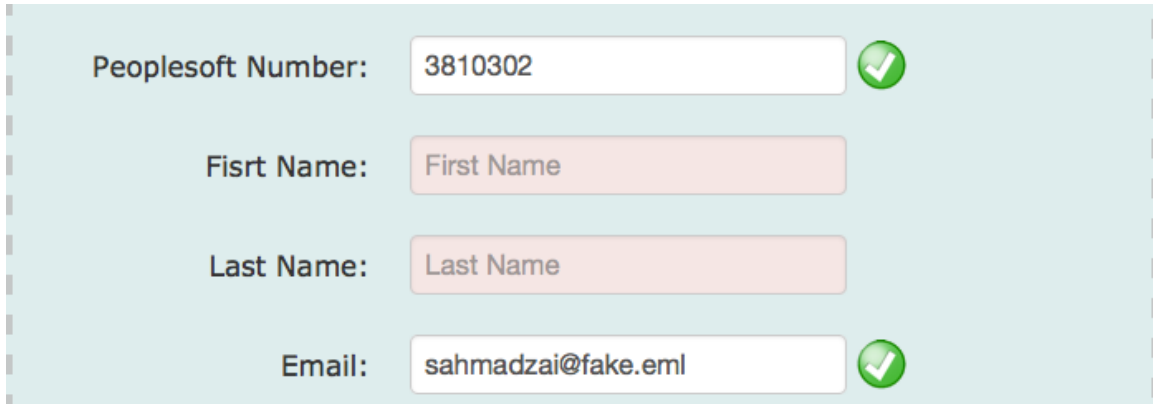
Degree: ▾

Start Term: ▾

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In the form, student's id and password are not editable, and if there is any change to peoplesoft number or email, system will check if the peoplesoft number is a 7-digit integer and if the email address is in correct format. Also system needs to make sure they are unique in the database.



The screenshot shows a form with four input fields. The 'Peoplesoft Number' field contains '3810302' and has a green checkmark icon to its right. The 'Fisrt Name' field contains 'First Name' and has a red border. The 'Last Name' field contains 'Last Name' and has a red border. The 'Email' field contains 'sahmadzai@fake.eml' and has a green checkmark icon to its right.

When click on Update button at the bottom of the page, system will check if the required information including peoplesoft number, student's name and email are filled in. If not, there will be a reminder pop up, otherwise, system will update the record and tell the administrator the data has been updated.

sahmadzai's information has been updated.

2) Add Student:

Apart from adding students from a list, there is a chance to add a single student to system:

Course Agent Administration

Adaptive Online Course Recommendation System

Students ▾ Courses ▾ Schedule ▾ Faculty ▾ Research Set Up ▾

Personal Information

ID: ✓

Peoplesoft number: ✓

Password: Retype not match

Retype Password:

First Name:

Last Name:

Email: ✓

Picture URL:

Academic Information

Advisor: ▾

Program: ▾

Degree: ▾

Start term: ▾

Submit

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System will automatically check if student's id is unique, and peoplesoft number is 7-digit integer and unique, password and retype password are match, email is in correct format, also all the required input box are filled. If all requirements are met,

then the new student will be added to the system and there will be a reminder to tell user the new record is added.

3) Graduate from list:

The screenshot shows the 'Course Agent Administration' interface. At the top, there is a navigation bar with the title 'Course Agent Administration' and subtitle 'Adaptive Online Course Recommendation System'. Below the navigation bar are several menu items: 'Students', 'Courses', 'Schedule', 'Faculty', and 'Research Set Up'. The main content area is titled 'Graduate students from list' and contains a file upload section. It includes a 'Select a file:' label, a 'Browse...' button, and the text 'No file selected.' Below this is a 'Submit' button. A note specifies the file format: 'File format: text file, tab separated; CSV file, comma separated, including following attributes:'. A table lists the required attributes: 'Peoplesoft' (Student's peoplesoft number), 'Last Name' (First and Last name (space separated)), 'First Name' (First and Last name (space separated)), 'Email' (Student's email), 'Program' (IST, LIS or TELCOM), 'Degree' (Master, PhD, m_online), and 'Start Term' (YY-term (13-1, 12-3, etc)). At the bottom of the page, it states 'Course Agent is developed by PAWS Lab, School of Information Sciences, University of Pittsburgh' and 'The design of this page is adapted from phpform.org'.

System can take in csv file and txt file, if the list is in other format, system will have a reminder of wrong format. The file should include peoplesoft number, student's last name and first name, email, degree, and start term. First system will find the matching peoplesoft number and set their graduate status to 1 if they are on the list. If student does not have a peoplesoft number, then system will check if they have email, if email is in our list, then student can also be set to graduate. If both their peoplesoft number and email are missing or wrong, then administrator need to find the student manually and update the record. There will be two forms return after upload the file, one is for students graduated successfully, and the other one is the accounts with problems.

Course Agent Administration
Adaptive Online Course Recommendation System

Students ▾ Courses ▾ Schedule ▾ Faculty ▾ Research Set Up ▾

These students have graduated

	Peoplesoft Number	First Name	Last Name	Email	Program	Degree
1	3545231	Abby	Adamczyk	AAdamczyk@fake.eml	LIS	Master
2		Erica	Abbey	ema36@pitt.edu	LIS	MLIS
3	3593757	Ameerah	Al-Mateen	AAI-mateen@fake.eml	LIS	Master
4	1513074	Allison	Babin	ABabin@fake.eml	LIS	Master

These accounts cannot be created because peoplesoft number and email *NOT* exist

	Peoplesoft Number	First Name	Last Name	Email	Program	Degree
1	1233122	testfirstname	test1	111test@111.com	IS	Master
2	6121436	testfirstname	test2	112@test.com	IS	Master

4 people have graduated

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2. Courses

1) Add Course:

Course Agent Administration
Adaptive Online Course Recommendation System

Students ▾ Courses ▾ Schedule ▾ Faculty ▾ Research Set Up ▾

Add Course

Course Number: ✔

Title:

Credit:

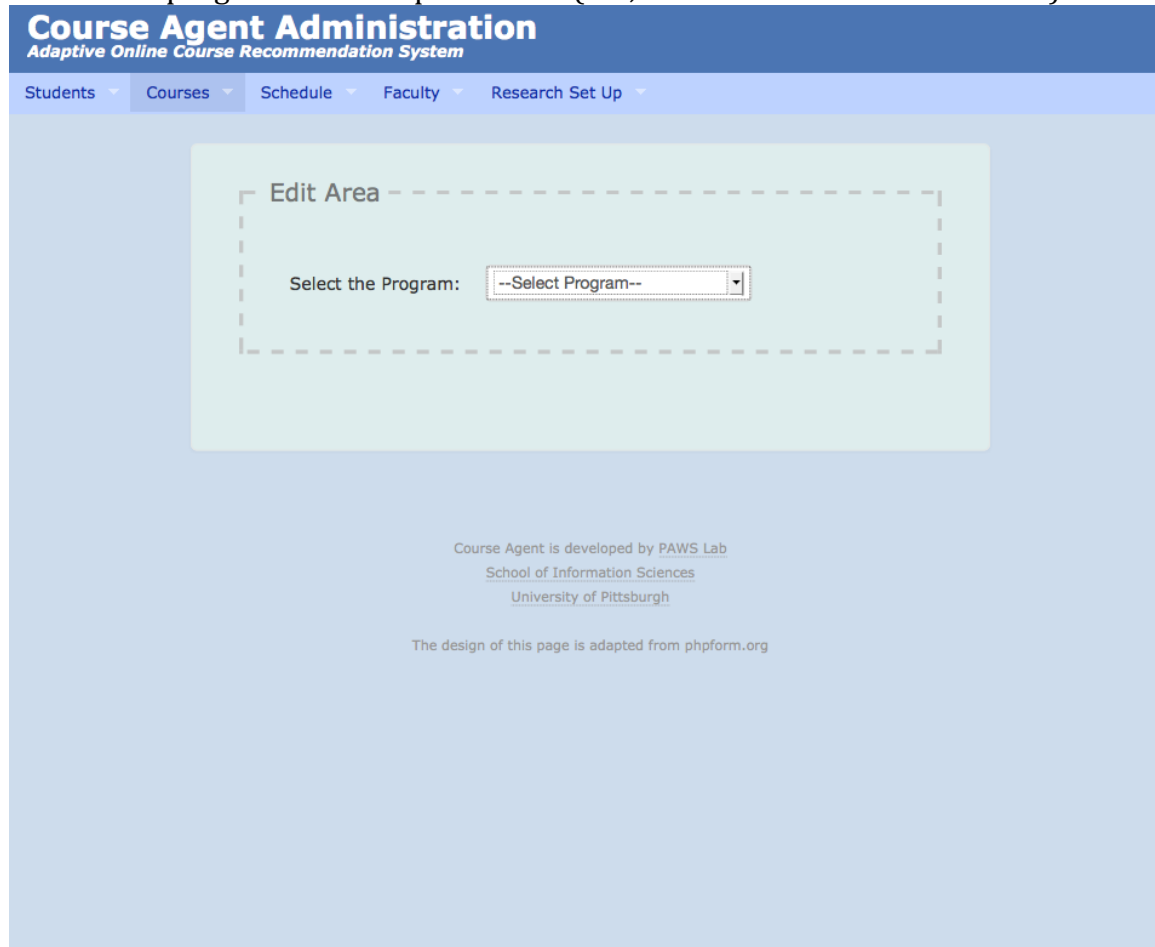
Description:

Note:

System will check if the course number input is unique in the system. To avoid any typo, credit used a drop down list. And both description and note are optional.

2) Edit Course Area

Choose the program from drop down list (IST, LIS and TELCOM are included):



The screenshot displays the 'Course Agent Administration' interface. At the top, there is a dark blue header with the text 'Course Agent Administration' and 'Adaptive Online Course Recommendation System' below it. A light blue navigation bar contains several menu items: 'Students', 'Courses', 'Schedule', 'Faculty', and 'Research Set Up', each with a small downward arrow. The main content area is light blue and features a large, light green rectangular box with a dashed border. Inside this box, the text 'Edit Area' is positioned at the top left. Below it, the text 'Select the Program:' is followed by a dropdown menu with the placeholder text '--Select Program--'. At the bottom of the page, there is a footer with the text: 'Course Agent is developed by PAWS Lab', 'School of Information Sciences', 'University of Pittsburgh', and 'The design of this page is adapted from phpform.org'.

Then choose the areas from the drop down list, then all the course number belongs to this area will be listed in a table.

Course Agent Administration




Adaptive Online Course Recommendation System

Students ▾ Courses ▾ Schedule ▾ Faculty ▾ Research Set Up ▾

Edit Area

Select the Program:

Areas:

Action	Course Numebr
	InfSci 2120
	INFSCI 2470
	<input type="text" value="INFSCI 2560"/>

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Click on the red button before the course number can delete the course from this area. If the administrator wants to add a new course to this area, then find the course from the drop down list in the last line, and click the blue button. The new course will be added. When adding a course, system will automatically check if this course has already existed in this area, if it has then a reminder will pop up and the course won't be added.

3) Rename Course

Course Agent Administration
Adaptive Online Course Recommendation System

Students ▾ Courses ▾ Schedule ▾ Faculty ▾ Research Set Up ▾

Rename Course

Course:

Course Number:

Title:

Credit:

Description:

Note:

Year:

Semester:

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Rename course function allows user to modify the course title, also other features of a course. When editing the details, system will check if the course number is unique. And system will keep the original record and the new record of the course information. Then we can always find out the old course information if we need to. Also, if the course number changed, all the tables in the database will be updated if they contain the course number.

Schedule

1) Edit Schedule

Course Agent Administration
Adaptive Online Course Recommendation System

Students ▾ Courses ▾ Schedule ▾ Faculty ▾ Research Set Up ▾

Select the semester and the year:

Fall ▾
2012 ▾
IST ▾
Select

Action	CRN	Course No	Course Title	Day	Time	Location	Instructor	CourseWeb	Duration	Date Modified	Note
	23962	INFSCI 2430	Social Computing	Thursday ▾	3:00 PM - 5:50 PM	IS 403	Farzan,Rosta ▾	Courseweb	semester	0000-00-00	Note
	22439	INFSCI 2540	Software Engineering	Monday ▾	6:00 PM - 8:50 PM	IS 406	Burns,Joshua ▾	Courseweb	semester	0000-00-00	Note
	16673	INFSCI 2550	Client-server Systems	Wednesday ▾	3:00 PM - 5:50 PM	IS 404	Flynn,Roger ▾	Courseweb	semester	0000-00-00	Note
	23540	INFSCI 2560	Web Technologies and Standards	Tuesday ▾	6:00 PM - 8:50 PM	IS 403	Spring,Michael ▾	Courseweb	semester	0000-00-00	Note
	16696	INFSCI 2629	Capstone in Security	Monday ▾	6:00 PM - 8:50 PM	IS 411	Joshi,James ▾	Courseweb	semester	0000-00-00	Combined: TELCOM 2630 (1669)
	16646	INFSCI 2710	Database Management	Tuesday ▾	3:00 PM - 5:50 PM	IS 403	Zadorozhny,Vladi ▾	Courseweb	semester	0000-00-00	Note
	22742	INFSCI 2739	Web Services and Distributed Computing	Monday ▾	3:00 PM - 5:50 PM	IS 522	Spring,Michael ▾	Courseweb	semester	0000-00-00	Note
	16689	INFSCI 2801	Geospatial Information Systems	Tuesday ▾	6:00 PM - 8:50 PM	IS 405	Karimi,Hassan ▾	Courseweb	semester	0000-00-00	Combined: INFSCI 0017 (16689)
	22201	INFSCI 2809	Advanced Topics in GIS	Thursday ▾	3:00 PM - 5:50 PM	IS 403	Karimi,Hassan ▾	Courseweb	semester	0000-00-00	Note
	28751	INFSCI 2965	Seminars: Special topics	Tuesday ▾	12:00 - 2:50 PM	IS 522	Griffin,Stephen ▾	Courseweb	semester	2012-07-30	Topic is Digital Scholarship. Com
	99001	INFSCI 2970	Independent Study	Monday ▾	<input type="text"/>	<input type="text"/>	Advisor,fadvisor ▾	Courseweb	semester	0000-00-00	Note
	16694	INFSCI 2980	Practicum	Monday ▾	<input type="text"/>	<input type="text"/>	Spring,Michael ▾	Courseweb	semester	0000-00-00	Note
	99002	INFSCI 2995	Thesis	Monday ▾	<input type="text"/>	<input type="text"/>	Advisor,fadvisor ▾	Courseweb	semester	0000-00-00	Note
	22344	INFSCI 3350	Doctoral Seminar: Systems	Monday ▾	11:00 AM - 12:15 PM	IS 522	Krishnamurthy,Pr ▾	Courseweb	semester	0000-00-00	Note
	99003	INFSCI 3990	Dissertation	Monday ▾	<input type="text"/>	<input type="text"/>	Advisor,fadvisor ▾	Courseweb	semester	0000-00-00	Note
	16665	TELCOM 2000	Intro to Telecommunications	Monday ▾	3:00 PM - 5:50 PM	IS 403	Weiss,Martin ▾	Courseweb	semester	0000-00-00	Combined: INFSCI 1070 (16665)
	16698	TELCOM 2000	Intro to Telecommunications	Monday ▾	3:00P-5:50P	<input type="text"/>	Weiss,Martin ▾	Courseweb	semester	0000-00-00	Note
	CRN	<input type="text" value="13123"/>	<input type="text" value="Course Title"/>	Monday ▾	<input type="text"/>	<input type="text"/>	<input type="text" value="."/>	<input type="text" value="Course Web"/>	semester		Note

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Edit schedule is used to modify the schedule information of the selected term, course number and course title are not allowed to change. When update the CRN, system will check if the CRN is a 5-digit integer and if it is unique when it's neither null nor 0. And to prevent from user's typo, I used drop down list for Day and Instructor. After modification, user clicks on the green button to update the record. And click on the yellow button, record will be deleted. At the bottom, user can add a new record to the schedule. If the CRN has been updated, system will update all the tables containing the CRN.

2) Print Schedule

The screenshot displays the 'Course Agent Administration' interface. At the top, there is a dark blue header with the text 'Course Agent Administration' and 'Adaptive Online Course Recommendation System'. Below the header is a light blue navigation bar with dropdown menus for 'Students', 'Courses', 'Schedule', 'Faculty', and 'Research Set Up'. The 'Schedule' menu is currently selected. The main content area is a light blue box containing a 'Print Schedule' form. The form is enclosed in a dashed border and contains the following elements:

- A heading: 'Print Schedule'
- A prompt: 'Select the semester and the year:'
- Three dropdown menus:
 - 'Semester:' with 'Spring' selected
 - 'Year:' with '2013' selected
 - 'Program:' with 'CS' selected
- A 'Select' button

At the bottom of the page, there is a footer with the following text:

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Select the semester and the program from the table. And Schedule will be opened in a separate tab in case user closed the page after printing. On the top of the schedule printing page is the program name and term information. The color for different program is the same with Information School's official website. And on the schedule, clicking on the course title, it will link to the course introduction on Information School's official website, and click on Professor's name it will link to the Faculty introduction page on Information School's official website.

Course schedule for IST program:

Graduate Information Science & Technology Program

School of Information Sciences, University of Pittsburgh

Spring Term Course Schedule 2012

Class Number	Course Title & Number	Day Time Room	Instructor	Change Last Made
19815	INFSCI 2000: Intro to Information Science	wed 6:00 PM - 8:50 PM IS 406	Paul Munro	2011-11-14
23236	INFSCI 2130: Decision Analysis and Decision Support Systems	mon 6:00 PM - 8:50 PM IS 411	Marek Druzdel	2011-11-14
16704	INFSCI 2140: Information Storage and Retrieval	mon 12:00 PM - 2:50 PM IS 406	dingjie He	2011-11-14
21036	INFSCI 2180: Knowledge Representation and The Semantic Web	tue 3:00 PM - 5:50 PM IS 406	Marek Druzdel	2011-11-14
26280	INFSCI 2300: Human Information Processing	wed 3:00 PM - 5:50 PM IS 403	Stephen Hirtle	2011-11-14
26209	INFSCI 2350: Human Factors in Systems	mon 3:00 PM - 5:50 PM TBA	Michael Lewis	2011-11-14
24332	INFSCI 2410: Introduction to Neural Networks	thu 12:00 PM - 2:50 PM IS 501	Paul Munro	2011-11-14
16673	INFSCI 2470: Interactive Systems Design	thu 6:00 PM - 8:50 PM IS 411	Peter Brusilovsky	2011-11-14
26906	INFSCI 2480: Adaptive Information Systems	wed 12:00 PM - 2:50 PM IS 403	Peter Brusilovsky	null
16708	INFSCI 2500: Data Structures	tue 6:00 PM - 8:50 PM IS 405	Roger Flynn	2011-11-14

Course schedule for LIS program:

Graduate Library & Information Science Program

School of Information Sciences, University of Pittsburgh

Spring Term Course Schedule 2012

Class Number	Course Title & Number	Day Time Room	Instructor	Change Last Made
21052	LIS 2005: Organizing & Retrieving Information	mon 3:00 PM - 5:50 PM IS 406	Cory Knobel	2011-11-14
21053	LIS 2005: Organizing & Retrieving Information	Online	undefined	2011-11-14
24133	LIS 2194: Ethics in Information Society	Online	Kip Currier	2011-11-14
23240	LIS 2194: Ethics in Information Society	thu 3:00 PM - 5:50 PM IS 404	Kip Currier	2011-11-14
16692	LIS 2214: Lib & Archival Preservation	thu 6:00 PM - 8:50 PM IS 404	M. Mealik	2011-11-14
21051	LIS 2214: Lib & Archival Preservation	Online	M. Mealik	2011-11-14
16675	LIS 2222: Archival Appraisal	mon 9:00 AM - 11:50 AM IS 404	Richard Cox	2011-11-14
19814	LIS 2222: Archival Appraisal	Online	B. Cumer	2011-11-14
16676	LIS 2223: Archival Access and Advocacy	tue 9:00 AM - 11:50 AM IS 404	Richard Cox	2011-11-14
19813	LIS 2223: Archival Access and Advocacy	Online	Richard Cox	2011-11-14

Course schedule for TELCOM program:

Graduate Telecommunications and Networking Program

School of Information Sciences, University of Pittsburgh

Fall Term Course Schedule 2012

Class Number	Course Title & Number	Day Time Room	Instructor	Change Last Made
20054	TELCOM 2010:Computer Networking Lab	tue 3:00 PM - 5:50 PM IS Lab	TBA	0000-00-00
22143	TELCOM 2010:Computer Networking Lab	thu 6:00 PM - 8:50 PM IS Lab	TBA	0000-00-00
19558	TELCOM 2011:Telecommunications Seminar	fr 12:00 PM - 2:50 PM IS 406	David Tipper	0000-00-00
22422	TELCOM 2120:Network Performance	mon 3:00 PM - 5:50 PM IS 411	David Tipper	0000-00-00
16682	TELCOM 2210:Electronic Communication2	wed 6:00 PM - 8:50 PM IS 411	Richard Thompson	0000-00-00
22760	TELCOM 2215:Unified Communications	thu 12:00 PM - 2:50 PM IS 404	Richard Thompson	0000-00-00
16676	TELCOM 2310:Computer Networks	thu 6:00 PM - 8:50 PM IS 411	Konstantinos Pelechrinis	0000-00-00
22342	TELCOM 2700:Introduction to Wireless Communications	mon_wed 11:00 AM - 12:15 PM IS 601	Prashant Krishnamurthy	0000-00-00
16671	TELCOM 2810:Introduction to Security	tue 12:00 PM - 2:50 PM IS 411	James Joshi	0000-00-00
16685	TELCOM 2820:Cryptography	mon_wed 1:00 PM - 2:15 PM IS 403	Prashant Krishnamurthy	0000-00-00

3) Set Current Term

Course Agent Administration

Adaptive Online Course Recommendation System

Students ▾ Courses ▾ Schedule ▾ Faculty ▾ Research Set Up ▾

Set Current Term

Select Current Term:

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Set current term is to extract the semester information from term table. Then user select the current term from the drop down list when a new semester begins.

4) Add Term

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Adaptive Online Course Recommendation System

Students ▾ Courses ▾ Schedule ▾ Faculty ▾ Research Set Up ▾

Add Term

Year:

Term:

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When the semester is not in the system, user can add a new semester from here. System will check if the year is in correct 4-digit integer format. Also when user click submit button, system will check if this term has already existed. If it does, a reminder will pop up, if not, this new semester will be added to system.

Faculty

1) Add Faculty

Course Agent Administration
Adaptive Online Course Recommendation System

Students ▾ Courses ▾ Schedule ▾ Faculty ▾ Research Set Up ▾

Add Faculty

ID:

Password:

Retype Password:

First Name:

Last Name:

Email:

Web Page:

Title:

Other Title:

Department:

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Add faculty is similar with adding student, except when adding title, I listed several most common ones in the list. If the title is not in the list, click on other. Then an input box will pop up. And we will save the input as the title.

2) Edit Faculty

Course Agent Administration
Adaptive Online Course Recommendation System

Students ▾ Courses ▾ Schedule ▾ Faculty ▾ Research Set Up ▾

Select faculty:

Personal Information

ID:

Password:

First Name:

Last Name:

Title:

Email:

Web Page:

Department:

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The design of this page is adapted from phpform.org

Since the number of faculty will be much fewer than students, I used a drop down list to choose faculty. Then their information will be listed below. User id and password are not allowed to change. And system will guarantee all the information input is correctly formatted.

Part IV. Conclusion and Future Work

This independent study gave me a chance to learn about PHP + jQuery + Ajax development. And in the meanwhile, I learned how to design a user-friendly website and how to make a better interactions between the users. Now the administrator end has all the functions to deal with student, faculty, course and schedule information. But there are still some features need to improve in the future.

First of all, when editing course information, now I update the course information in the table their course number is not change and create a new record only if the course number has changed, since in current design the course number is the primary key in the course table. I keep the record of all changes in the history table. But it will be better if we keep the record in the course table too even if the course number does not change. Then when we look for courses from long time ago, we can still get the course title at that time.

Second, the design of editing schedule may not be good enough. There could be a large number of courses in each term, so listing all the record in a big table may be not clear. In the future, we may consider what information need to list in that table and maybe to make it smaller. Or we can think about how to rank the course and how to separate them into smaller groups to help user easily find their target.

Last but not least, since more and more people using smartphone or tablet browsing website. We could add responsive design to the website to fit different appliances better. Then we can bring users more convenience.