Design of a Comprehensive Student Information System (SIS) and User Interface for the Honors College at USF

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Abstract

The creation and management of accurate, up-to-date information regarding a student’s academic career is critically important in the management of a university. Previously, the USF Honors College relied heavily on paper records for this initiative. This research focuses on the design and implementation of a comprehensive student information system and user interface to replace the current paper records. Honors College Staff are able to directly access all aspects of a student’s academic progress through a secure, online interface embedded in the college’s website. The system utilizes user authentication, displaying only information necessary for an individual’s duties. Additionally, each sub-system has authentication allowing authorized users to create or update information in that sub-system. All data is thoroughly reviewed and validated on the server before actual record alteration occurs. In addition to a staff user interface, this system features a student user interface, allowing users to access information and submit requests electronically, saving both completion and processing time.

All data is stored securely on SQL servers managed by the USF IT department. Standard best practices are employed throughout the system to ensure the highest possible level of security and standardization. The system features a complex logging system to track all users’ access and ensure conformity to data access guidelines. This system is expected to increase the efficiency of the college’s record management thereby decreasing the work hours needed to access and deliver student records to users throughout the day, and again later to file these records. It is anticipated that this system will increase the efficiency of the department, and allow staff to better serve students.

Problem Statement

The creation and management of accurate, up-to-date information regarding a student’s academic career is critically important in the management of a university. Previously, the USF Honors College relied heavily on paper records for this initiative. While paper records are a traditional way of managing student data there are several drawbacks to this method. First, paper records may be difficult to manage and track. The physical exertion required to retrieve, alter, and re-file paper records are all non-value added activities. Additionally, it is only possible for one user to alter physical records at a time. Finally, data integrity and logging is difficult.
Introduction

This research will focus on the design, implementation, testing, and analysis of a comprehensive, integrated, semi-autonomous student information system (SIS) and user interface (UI) to replace the paper records. Honors College staff will be able to directly access all aspects of a student’s academic progress with the Honors College through a secure, online interface embedded in the college’s website. The system will utilize a system of user authentication, displaying only the information necessary for an individual staff member’s duties. In addition, each sub-system will have authentication which will allow authorized users to create, update, or remove specific information in that system. All data will be thoroughly reviewed and validated on the server before actual record alteration occurs.

This system is expected to increase the efficiency of the college’s record management and staff. Significantly fewer man hours will be necessary to access and deliver student records to users throughout the day, and later to file these records again. It is anticipated that this system will increase the efficiency of the department, and allow staff to better serve students.

Objectives

The objectives of this project include creating an easy to use and comprehend system, ensure data integrity and validation, maintain visual conformity throughout the system, increase efficiency and convenience for staff and student users and contain a strong error-handling system.

Design Constraints

USF Web & Data Guidelines

The USF Honors College website follows all relevant USF web and data guidelines as outlined by USF IT. These guidelines are required for all official USF websites. Highlights include: department contact information at the bottom of all pages. Webmaster contact information readily available, disclosure of all external links and inclusion of the USF logo, with link to www.usf.edu on all pages in the upper left-hand corner.

Users with Limited Computer Knowledge

The layout and styling of the site was specifically chosen to assist users with limited computer knowledge. While most college students are technologically savvy, and easily able to navigate online and complete complex tasks, many Honors staff are still less comfortable integrating with online resources. This fact was carefully considered during the development of the SIS and every step was taken to create a user friendly environment. Consistent layouts, styling and formatting were used to increase user efficiency and acceptance. Additionally, graphical formats are used whenever possible, including graphs, charts, icons, font styling, colors, and lists. For utilities specifically designed for a designated staff member, that staff member was consulted during each phase of development and all user input was
carefully considered and integrated into the design of the utility, providing it did not conflict with the
global conformity of the overall system.

Background and Site Statistics
Prior to the SIS project the Honors College relied exclusively on paper records and a small
collection of electronic tables for all data management. The Honors College website was a simple static
site with limited content on general admissions requirements and related information. The SIS utilizes
portions of code and utilities found freely online, but is otherwise completely original and entirely
designed in house by the Honors College IT Design Team.

12/1/2009 – 12/01/2010

Total Unique Visits: 126,808
Total Unique Visitors: 59,393

Avg. Time on Site: 3:27

Estimated % New Visitors: 43.07%

Traffic
Direct: 30.28%
Search Engines: 37.26%
Referring Sites: 32.47% (USF.edu 12.1

Most Searched Keywords (Google):
1. USF Honors College
2. USF Honors
3. Honors College
4. Honors College USF
5. Honors
6. Honors USF
7. USF AP Credit
8. 7 Year Medical Programs
9. USF Honors Program
10. USF Dual Enrollment

Most Popular Content:
1. Homepage
2. Staff Home Page (Restricted Access)
3. Calendar of Events
4. 7 yr. Medical Program
5. Admissions Requirements
6. Student Information Home Page (Restricted Access)
7. Online Forms
8. Honors Scholarships
9. AP, IB, DE Credit Equivalencies
10. About the Honors College
11. Advising Home
12. Thesis
13. Honors Curriculum
14. Honors Staff
15. General Education Requirements
16. FAQs
17. Honors Community
18. FreshPeople Tips
19. Event RSVP
20. Orientation Home
**Visited by:** All 50 States, Canada, Mexico, Belize, Honduras, El Salvador, Costa Rica, Panama, Venezuela, Columbia, Guyana, Brazil, Ecuador, Peru, Bolivia, Argentina, Chile, Russia, Poland, Romania, Ukraine, Bulgaria, Hungary, Czech Republic, China, Mongolia, South Korea, Japan, Taiwan, India, Pakistan, Iran, Iraq, Nepal, Bangladesh, Sri Lanka, Maldives, Turkey, Azerbaijan, Saudi Arabia, Jordan, Israel, Lebanon, Cyprus, UAE, Qatar, Burma, Thailand, Vietnam, Cambodia, Philippines, Malaysia, Indonesia, Australia, New Zealand, Melanesia, Morocco, Algeria, Tunisia, Libya, Egypt, Kenya, Rwanda, Tanzania, Mozambique, Zambia, Zimbabwe, Senegal, Ivory Coast, Ghana, Togo, Nigeria, Botswana, South Africa, Norway, Finland, Sweden, Estonia, Lithuania, Denmark, United Kingdom, Ireland, Germany, Netherlands, Belgium, France, Switzerland, Austria, Portugal, Spain, Italy, Slovenia, Bosnia, Albania, Greece,

**Http://honors.usf.edu**

- 492 unique web pages (318 of those are interactive and dynamic)
- 13,865 files
- 9.6GB of total space
- 70mb of Database data
- over 10,000 database queries
- 13,457 student records
- 846 newsletter submissions
- 3,593 FreshPeople 5 event attendees
- 5,866 RSVPs
- 360 Calendar events
- 162 ‘Congratulations’
- 40 Special Announcements

*Statistical data as reported by Google Analytics*
Self-Education

As a Mechanical Engineering student I had little opportunity to be exposed to computer programming, database design, or web development. As a Student Assistant for the Honors College during my freshman year I observed the current state of data management at the college and desired to help improve it. Through online resources such as W3schools.org I self-instructed myself on web and data design and management practices.

Servers, Software, and Equipment

It is currently the belief of the USF IT department, and the Honors College technology development team that it is in the best interests of all involved to have USF IT manage all hardware related to the storage of student records. All data is stored securely on SQL servers managed by the USF IT department allowing management of the system by a very small team. Standard best practices are employed throughout the system to ensure the highest possible level of security and standardization. The system also features a complex logging system to track all users’ access to the system and ensure conformity to data access guidelines.

Design

Design Languages

HTML, hypertext markup language, was used for all basic layout and placement of objects. CSS, cascading style sheets, is utilized for styling and design flourishes to ensure global conformity and ease of design alterations on a global scale. ASP, active server pages, is utilized for all real time content development and data organization. Finally, SQL, structured query language, is employed for all data management, retrieval, and storage.

Layout

It was desired to keep the navigation and layout of the Honors College website as simplistic as possible, while still retaining the ability to list all relevant pages. Future scalability was also considered during the selection of a navigation system. To conform to standard USF web practices, the USF Honors College designed a tiered menu system and utilized many of the top tier wordings employed on usf.edu, including: Prospective Students, Current Students, Community and Scholarships. Additional top tier categories include: FreshPeople Tips, Honors College Events, Communications and Honors College Forms. Subordinate menu items are placed under appropriate categories. Every effort was made to ensure each item occurred only once in the menu. This is implemented throughout the navigation
system save one specific instance, the Accelerated Programs. It was determined that since the Accelerated Programs were a mission critical aspect of the College, and equally important to both incoming and current students they be repeated under both sections. Appendix A includes a graphical depiction of the navigation schema.

The SIS was developed as a module compilation of applications and utilities. This allows the system to be fully scalable. Each application relies on basic student information contained in a central file, but is otherwise independent of other system. This model also allows for modular access, dependent on a staff members required access to the system.

**Accessibility**

“Best Practices”

All web and data “best practices” were utilized during the development of the data and web portions of this project. The World Wide Web Consortium (W3C) Markup Validation Service was utilized to ensure conformity with all markup standards. The HTML 4.01 Transitional format was selected as the language of development.

**Cross Browser Compatibility**

The SIS is regularly tested, and designed to display and function correctly in a wide variety of operating systems and browsers. The SIS designed to operate at full capacity on the following systems:

- **Windows XP, Vista & 7:** Internet Explorer, Firefox, Opera, Google Chrome, LunaScape, Lynx
- **Mac OS X & Leopard:** Safari, Firefox
- **Ubuntu (Linux):** Firefox

**Text Only & Printer Friendly**

Third party assistive software provided by UsableNet generates real-time text-only versions of all pages programmatically. This relieves the development team of the time-consuming process of continually updating a static text-only version of the site to accommodate these users.

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**Honors College**

- **Admission**
  - About [1]
  - Admissions [2]
  - Early Admission [3]
  - Dual Enrollment [4]
  - Orientation [5]

- **Academics**
  - Curriculum [6]
  - Thesis [7]
  - Events [8]
  - My Events'

- **Forms**
  - Permit [9]

- **RSS**
  - Events
  - Announcements

- **FAQ’s**
  - FAQ’s [0]
A printer friendly feature programmatically removes background, superfluous images and formatting, menu bar, header, and footers from images before a physical copy is made.

**Mobile Device Friendly Site**

When server side logic determines a request originated from a mobile device the mobile device application is launched. This system is designed to load nearly instantly, and provides admissions information for the college and allows access to most popular forms.

**Search**

A sitemap and Google Custom Search are provided for ease of access to desired information. The advanced filtering and significance factors available through Google Custom Search were implemented to assist users in accessing desired information quickly and effectively. Elevated page ranks were assigned to all top tier pages to ensure they were returned at the top of the results list. Additionally, reduced page rank values were assigned to individual student records and scheduled publications such as the *Know-a-BULL News* newsletter.

**Electronic Forms**

It is the strong belief of the design team that users should not be required to provide data that is already in the student information system. Therefore, the SIS utilizes queries against the database to auto fill standard information for a student once they have accessed an electronic form utilizing their USF ID. Required fields are used to ensure that all information required to process a specific request is collected. This is accomplished through the use of Spry Assets, which utilize Javascript and CSS to check inputs on the client side, and use CSS to change the style of incorrect entries for quick visual reference. Additionally, server side logic, using ASP and regular expressions, is used to
validate all information before any database modifications are made. This ensures that even if a user has disabled JavaScript, all information will be validated.

Forms are designed to be user friendly, organized in a logical order with all related information grouped together using the html <fieldset> and <legend> commands. Through the use of post submission processing it is not necessary to mandate a specific formatting schema for data such as zip code, phone number, and USF ID. All fields are reformatted programatically through ASP post submission before database alterations are performed.

**Submission Confirmation**

All electronic forms display a confirmation page upon successful submissions. Many of these forms display select information contained in the submission, and all include a timestamp and result message confirming the submission. In addition to confirmation pages, all electronic form submission trigger confirmation emails to users. These emails duplicate the confirmation page and confirm submission with a timestamp and result message.

**Automated Preliminary Processing**

After submissions are received, but before they are delivered to the queue for ultimate processing by appropriate staff, preliminary automated processing is executed. During this phase, all submitted data is scrubbed to ensure data security and resist SQL injection attacks. Each input is evaluated, and reformatted if necessary to conform with desired data schema. For example, in the New Student Information Form, the high school field removes the words “High School”, “School”, “HS”, and “H.S.”, leaving only the name of the school. In the address, all street categories are reduced to abbreviations with appropriate punctuation. For example “Avenue” becomes “Ave.”, “Drive” becomes “Dr.” and etc.
Staff Processing

Upon successful completion of an electronic form, the submission is appended to the queue for that form for later processing by the appropriate staff. Graphical styling is used to alert staff that forms are pending processing, including a “- New ! (#)” attribute appended to the end of each utilities’ link on the staff menus, where # is the number of forms pending processing. An email alert to appropriate staff is also triggered, ensuring they are alerted even if they are not currently logged in to SIS.

Archival of all Submissions

All electronic form submissions are archived in the database for retrieval at a later date. After appropriate processing, all relevant log entries are recorded and the record is removed from the processing queue. All submission information is retained in the database according to state, federal, and internal data retention policies. All records are accessible through a student record search embedded in the SIS.

Microsoft Access

At the beginning of this project, the Honors IT development team did not have access to a SQL server or other enterprise class database application. During development, and through the first year and a half of production, the SIS relied on the Microsoft Access database application for data storage. While MS Access provides most of the functionality and integrated functions of larger data applications, there are severe restrictions in the software’s ability to handle significant traffic and manage multiple active connections. This limitation would prove a significant obstacle as the SIS matured and additional modules were implemented. The resolution to this will be covered in a subsequent section.
Event Attendance

Introduction

The Honors College hosts many events annually. These include academic lectures, seminars on myriad topics, artistic performances and social activities. In an effort to increase attendance at these events, and to encourage a stronger bond between Honors students, the Honors College implemented the “FreshPeople 5 Requirement”. This requires incoming freshman to attend no less than five approved Honors College events during their first year. A technological solution was necessary to accurately track and manage this requirement. In response to this need, the Honors IT development team developed the Honors College Events RSVP system and the ‘My Events’ module for the existing SIS. The RSVP module allows students to RSVP electronically for available events, tracks these RSVPs, and closes events once they are full. RSVPs are recorded in a student’s ‘My Events’ portal, which allows them to review upcoming events, cancel their reservation, and track their total attendance as well as currently accumulated “Fresh 5” credits.

Equipment Selection

After extensive research, the MSR400 Mini Card Reader battery operated wireless magnetic card readers were selected to support this requirement. Four of these readers were purchased for use with this program. These readers have onboard flash memory which frees the user from being restrained to a laptop or other computer. These devices are able to read three track magnetic cards, and timestamp all entries. They are capable of storing approximately 3,000 records between processing and connect to a computer through an integrated USB port. These readers allow Honors staff to attend honors events and “swipe in” students using their USF ID card. After an event the Honors IT team is able to retrieve the USF ID Card’s ID number and convert them to USF ID numbers through an online database utility created in conjunction with the USF Library. Software was then developed to allow staff to import all attendee’s records from the device, automate all processing required, and update the database and create all relevant log entries to show a student’s attendance at an event. This allows students to track their event progress in near real-time. While USF ID cards are required for a student to receive credit for an event, there is also a manual addition function built into the module which allows students to be manually added to an event in specific cases.
In addition to event attendance, standard wired card readers are also employed at the Honors College office front desk for signing students in for appointments and walk-ins. When a student enters the office, they are asked to slide their ID card through one of two readers. One is for students with scheduled appointments, the other for students requesting walk-ins. This system then updates the database with a timestamp of their arrival, and adds them to the processing page. Each student is able to see the average wait time for the current day, and also any students who may be in front of them in line. Front desk staff are able to access a listing of all currently waiting students, and view the time they have been waiting. When a student is seen by a staff member, this is recorded in the system by the front desk staff and their name is removed from the list. In-house ASP generates real-time statistical reporting of this data and exports it through the Google Charts API to generate various graphical charts for staff use. This information allows the Honors College to better serve students by analyzing peak walk-in hours and days, and increasing walk-in coverage during these times. It is also possible to track how many students each staff member sees on average, and their average wait time. This is useful when determining advisor assignments for the following year.

**Database Normalization**

During initial development of the SIS there was no defined plan on what it was to become. As the project matured, and took on a more modular future scalable model, it became evident that the database had not been designed according to database normalization protocols. This necessitated a redesign of the database schema and data manipulation. W. Travis Thompson of the Planning & Analysis office with the USF Office of Decisions Support offered valuable insight and direction to online resources dealing with database normalization. After extensive research a new database schema was developed. Once this schema had been thoroughly evaluated and reviewed, the Honors IT team migrated existing data to the new format. Notable alterations include: removing all duplicate data from subordinate tables, including first name, last name, email, address and phone number, Utilizing SQL JOIN commands to pull data from multiple sources and the implementation of the USF ID as the database wide primary key.

**Staff User Authentication**

The SIS employs a multi-stage credential validation system. The SIS is only accessible from designated USF workstations. All stations with access to the SIS have had dedicated

![Staff main menu](image-url)
IP addresses assigned by USF IT. These addresses are contained in an access table within the database, and when a user attempts to access the log in page the requesting computer’s address is compared with the records in the table. If the request originates from an approved machine the log in screen is presented. The log in screen prompts users for their username name and password.

Passwords must be strong, including eight digits, two capital letters, two numbers, and two special characters. Passwords are reset on a regular basis. MD5 encryption is used to encrypt the password before it is transmitted, through an SSL encrypted connection, to the database for evaluation. The encrypted password is compared to the specified user’s record and evaluated. If the record is a match, the system utilizes ASP session variables to grant access to the primary staff access menu.

Every individual restricted page evaluates the users IP address, and also ensures there is a correct key provided via ASP session variables. There is also a defined time-out period for the system of 30 minutes. If a user’s account is inactive for this period, the session is automatically terminated.

All processing pages that alter student records also employ a site referrer check. This check ensures that the page that is providing information to the processing script is inside the Honors domain, and is the approved page for that script. The majority of modules in the SIS are limited access utilities. A user’s account record has a listing of all utilities that user is authorized to access. Only those utilities which a user has been authorized to access appear on that user’s menu. Additionally, all limited access utilities validate the user’s specific utility permissions before granting access. All attempts to access restricted pages are logged. There are a pre-defined number of attempts a user may make before their account is temporarily locked. All attempts to access limited access utilities for which a user does not have permissions are also recorded.

Mentor & Orientation System

In addition to the staff and student interfaces for the SIS, there is also a summer orientation Peer Mentor application. This application allows for the efficient processing of all incoming students during the USF Summer Orientation program. Select current Honors College students are selected to serve as Honors College Peer Mentors and assist incoming students with the transition to college. The Mentor Orientation System allows these users to access specific areas of a student’s academic record as they pertain to orientation. Each mentor is assigned a username and password. Mentor users have no access to the SIS staff access utilities. Professional Advisors are able to define a preliminary course schedule for incoming students, accounting for parameters such as incoming college credits, standardized test scores, and academic history.
This information is then accessed by the mentor during the student’s individual session with the mentor to finalize a first semester schedule. The mentor then uses the system to record the student’s finalized schedule and record any pertinent academic notes. Before a record may be submitted, and used to update the students Honors file, an authorization PIN must be entered by one of the Professional Advisors. Each mentor’s activities and Professional Advisor approvals are logged appropriately. The system also sends a record of the advising session to the student in email format, along with a copy of their first semester schedule. After the summer orientation, mentors are able to refer to a student’s orientation record to assist in answering any additional questions they may have. Additionally, professional advisors are able to access the orientation notes and schedule made for a student during orientation through the Advising User Interface (AUI).

**Advising User Interface (AUI)**

The Advising User Interface is designed to allow authorized Professional Academic Advisors access to all facets of a student’s Honors College records in a central location. The application is limited access, and requires that the user be an Academic Advisor, or other user with demonstrable need to access this information. The AUI provides Advisors a method for viewing all previous academic advising records for a specific student, including date, time, reason, Academic Advisor, notes and recommended schedule. The AUI allows Advisors to make notes on a student for each advising session they have. Once notes are submitted, they are processed and entered into the SIS database for archival. Unless an Advisor opts out, the student automatically receives an electronic copy of the notes in email form. The system includes the ability for an advisor to “flag” a record for future follow up. All flagged records alert future advisors through graphical and textual methods at the top of the screen. This ensures that future advisors visit the particular notes that may be important to the current advising sessions. To ensure data integrity, no user is able to delete or alter notes once they have been submitted. The only option for modifying the information included in notes is to append an amendment. Any user with access to the AUI may append additional notes to any note in the system. This is duly logged and noted on the record as an amendment with user name and timestamp.
In addition to advising notes, there is also an academic data module which allows the tracking of a student’s progress through the Honors curriculum. The application contains records for the student’s major, second major, and minor, as well as any special attributes the student’s record has, such as Provost’s Scholar, or Research Scholar. All students living in the Honors Living Learning Community (HLLC) are also represented in the AUI. The student’s room number, bed number, and term are included. Once a student has begun Thesis, pertinent information from that module is also presented to the advisor. The finalized schedule, and mentor notes from the student’s freshman orientation are also included in the AUI display. While the AUI is designed to be a one-stop-shop for general advising, a “launch pad” is provided that will allow advisors to directly access other modules in the SIS to alter additional portions of a student’s records without the need to re-enter their USF ID.

**Graduation Certification Application**

Graduation certification is a critical aspect of the Honors College core responsibilities. Honors staff must evaluate the records of all students who apply for graduation as potential graduates and determine whether they meet the criteria to graduate with the Honors designation on their diploma and transcripts. Historically this process was very manual, and required that each
potential graduate’s file be manually pulled from storage. Each aspect of the graduation check was then manually retrieved, either through the USF Banner database system, or through paper records. Additionally, as each record needed to go through many validation steps before it could be certified for graduation, the user needed to store large amounts of paper files in their office, and keep them in a workable order. Notes and tracking the progress of these files through the graduation process was difficult. The Graduation Certification Application aims to alleviate much of these restraints by automating many of the steps.

![Fig 15. Graduation Certification Queue](image)

Once a student is identified as a potential graduate, by applying for graduation with the USF Registrar’s office, they are sent an invitation to complete the Honors College Graduation Certification Application. This is a nine phase application that the student completes electronically through the Honors College website. This form collects all of the information the staff need to begin processing a student’s record. The form collects information including: whether the student will attend the Honors graduation ceremony, how many guests they will have, post-graduation contact information, graduation questionnaire, information regarding the students thesis experience, information regarding the students research and conference presentation experience, and exit survey.

Once a student submits the application, the application is validated and then added to the processing queue for the graduation certification staff. All information already included in the SIS records that is relevant to a student’s graduation is appended to the record for easy retrieval. A staff user then accesses the record and begins processing. There are several items that must be validated for a student to be certified for the Honors designation. These include: having met with their departmental advisor for a graduation check, having met with an Honors Advisor for a graduation check, having successfully completed the required Honors curriculum, having completed the foreign language exit requirement (FLEX), graduating with a minimum 3.3 overall GPA, as calculated by the Honors College and successful completion of an Honors Thesis. The Graduation certification utility uses a graphical method to track the status of these checks, and records all modifications to the student’s file. Every time a staff member alters the record, appropriate emails are generated, and automatically sent to the student outlining what steps they need to take to continue the graduation process. The graduation certification utility also includes a notes section where advisors may record information regarding the
student’s graduation. These notes may be kept internal, or may be sent electronically to the student. Advisors may also flag a record for additional processing at a later date.

The utility tracks the number of graduates and guests attending each of the Honors graduation ceremonies, and allows the staff to accurately assign ceremonies so there are equal numbers of students attending each. During the graduation ceremony, staff are able to access this system remotely to sign students in. When a student arrives for the ceremony, staff are able to access their record, determine what type of graduation regalia they are to receive, verify they have been fully certified for graduation, and record that they attended the ceremony and collected their graduation regalia. After the end of the semester, staff are able to access the system a final time and confirm that each student formally met all graduation criteria. The staff member then updates the student’s SIS record with the correct type of graduation honors. This final step removes the student from the active Honors population, and updates their record appropriately.

Know-a-BULL News

The Honors College sends an electronic newsletter, the Know-a-BULL News, weekly to all students, graduates, and local donors. This newsletter contains information from the Honors College, Office of Undergraduate Research, Office of National Scholarships, and select student and faculty submissions. Due to the large quantity of information that must be processed weekly for this newsletter the process has been automated. Students, faculty, and staff access a newsletter submission form electronically and submit an article for consideration in the following week’s edition of the newsletter. The newsletter is sent on Tuesday mornings.

Before sending the newsletter, authorized staff editors access the submissions and make corrections, shorten entries, and validate content for conformity to newsletter requirements. Editors also remove duplicate entries. After editing, the
Honors College Dean accesses the newsletter and approves or denies each entry. Once the approval process is complete, the newsletter is automatically generated and sent to over 8,000 readers. The application automatically generates the section “This week at a glance” and the “Upcoming Events” section. The “week at a glance” section outlines all articles in the current edition of the newsletter, and flags all entries less than seven days old at “New! -”. Each newsletter edition is included on the Honors College website, and archived for future use.

### Increasing User Base and Database Logistics

As discussed in a previous section, at the outset of this project, the design team did not have access to a SQL server or other enterprise class database application. Therefore, the original system was designed to interact with a Microsoft Access database. However, as the SIS grew and attracted more users and traffic increased, the single Access database was unable to maintain performance. The system was unable to process the large number of active connections simultaneously and would result in users receiving errors, or simply unable to retrieve data. The design team still had no access to a proper database application, so in an effort to patch the system, the database was split into three independent Access databases; Records.mdb, Events.mdb and Index.mdb. The Records.mdb file contained student’s academic information and advising history. The Events.mdb file managed all calendar, RSVP, and attendance information while the Index.mdb database contained all information necessary for the display of unrestricted website pages such as the home page, including the congratulations banner, special announcements, emergency alerts, news, Did You Know? And staff information.

While this temporarily restored full functionality to the system it generated significant logistical problems for the design team. Problems arose due to the fact that many queries staff made regularly required information from multiple databases. The system was re-written to access this information as efficiently as possible. A database was opened, the information was retrieved, and then the database

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<th>#</th>
<th>Activity Date</th>
<th>FirstName</th>
<th>LastName</th>
<th>Email</th>
<th>USFID</th>
<th>Major</th>
</tr>
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<tr>
<td>5</td>
<td>3/21/2010 10:00:25 AM</td>
<td>student</td>
<td>student</td>
<td><a href="mailto:student@student.university.edu">student@student.university.edu</a></td>
<td>56789</td>
<td>Criminology</td>
</tr>
</tbody>
</table>
was closed as quickly as possible. When lists were required, it was necessary to store all information in ASP record sets. Then a loop was employed to pull the additional information from the second database a single record at a time, and process them through additional loops. This was vastly less efficient than a SQL JOIN query, leading to long wait times for certain utilities.

**Microsoft Access to SQL Server Migration**

Through contact with Carolyn Mourey, of USF IT, the design team was eventually able to secure access to a USF IT managed SQL 2005 server. While many integrated functions are the same for Access and SQL, there are sufficient differences to require a re-write of the entire system. Of considerable concern was the Access integrate function Date(), equivalent to SQL’s GetDate() function as many SIS functions rely on time stamps. Additionally, since the SIS had already been re-written to integrate with three independent databases, it was necessary to redesign the system to use SQL JOIN commands and other integrated SQL commands to eliminate the need for many of the loops that were employed for data manipulation. The process of redesigning the system to work with a full SQL server took nearly six months. In addition to redesign of the system, data migration scripts needed to be created for each table to be migrated from Access to SQL. After extensive testing and alterations, a migration date was selected. The migration required the complete suspension of all web and data systems for the Honors College, and so the migration was scheduled for a Friday evening, beginning at 5:00 PM. Once the system had been suspended, the design team alerted USF IT, and the data migration was initiated. After all data was successfully migrated, the design team brought each sub-system back online individually and thoroughly tested the functionality. Total migration time exceeded 14 hours. The system was back to full functionality by the following Monday, for open of business. Currently, the SIS is being prepared for migration to a SQL 2008 server, and migration to a USF IT Tier 0 security server. This will necessitate certain alterations to the design schema. The process is expected to last between three and six months.

**IT Ticket System**

As the Honors College migrated to a nearly paperless model, requests for additional functionality, new modules or applications, and modifications to existing systems increased significantly. It became evident that as there are currently only two staff on the Honors IT team a system for tracking and determining significance of incoming requests would be necessary. The IT Ticket Management system was created to assist Honors IT staff with the management of requests. All staff have access to the IT Ticket Request utility which allows them to request projects from the design team. Staff are able to submit requests with start and due dates. These submissions are added to the IT Ticket queue for processing. IT staff are notified

*Fig 19. IT ticket email*
by email that there are new tickets. IT staff review the submission and assign it to a delegate for processing, and assign a priority. IT staff also evaluate the requested due date for feasibility, and modify if necessary.

All tickets are sorted by delegate. Each delegate views a list of all tickets currently unassigned, or assigned to them. Tickets are sorted into four priority categories; minor, medium, significant and critical. Tickets are displayed in reverse priority groups, ordered by ascending due dates. The top of a delegates assignment page also lists all tickets with due dates in the upcoming three days, regardless of priority. Tickets with upcoming due dates are highlighted in orange, and tickets with due dates of the current day, or past due dates are highlighted in bold and red. Tickets with future start dates are included in the queue in appropriate order, but are greyed out for ease of identification. The processing form includes areas for IT staff to place notes and other information regarding the status of the request. Each time an administrator modifies the ticket, the requesting user, and any included interested parties are notified electronically. There are areas for administrators to include SQL or ASP/HTML code that will be archived in the database, but not included in email versions of the ticket for security reasons. The code portions are included on the online ticket system that administrators view.

Once a ticket has been completed an administrator marks the ticket complete. If the user is authorized to review their own work, the ticket is removed from the list. If the user requires review from a supervisory IT staff member, the ticket is placed in a review status, and supervisory IT staff are notified electronically. Once the supervisory staff review the ticket it may be validated and removed from the queue. Tickets may be marked with four statuses; active, held, cancelled and completed.

Fig 20. IT tickets delegate list
Future Work

Future work on the SIS will include integrating the Office of Undergraduate Research and the Office of National Scholarships databases with the SIS. These departments work closely, and often interact with the same students. This will allow users from all three departments to access relevant information regarding a student’s activities with the other departments. Proper precautions regarding data access, and logged entries will be used. Additional forms will be integrated into the system as they become necessary. The SIS has become an integral part of student and staff experiences with the college. Through user focus groups, surveys, use analysis and intelligent design future research aims to pinpoint ways to optimize user experiences, increase data integrity and efficiency, decrease non-value added resource requirements and improve overall performance of the system.

Conclusion

Results

The SIS system is expected to increase the efficiency of the college’s record management, decrease time required to access and deliver student records, decrease data duplication, increase data integrity, increase user access and convenience, decrease time spent on non-value added tasks and increase ability of staff to better serve the student population.
Acknowledgements

I would like to thank John Camacho, Assistant Webmaster for the USF Honors College, and Webmaster for the Office of National Scholarships for his assistance in the database migration, his second set of eyes when something wasn’t working quite right, and his willingness to assist whenever needed. Thanks to the entire Honors College staff for their understanding and patience throughout the entire project. A special thanks to Dr. Stuart Silverman, Dean of the Honors College, for his willingness to believe in me and give me a chance. Carolyn Mourey, Application Project Manager - USF IT for the advice she gave throughout the process, and direction to online resources critical to the development of the project. W. Travis Thompson, Planning & Analysis - Decisions Support for his assistance and direction to additional online resources. USF IT staff, specifically Jinyi Wang, for their assistance throughout the project and migration. Finally, Billy Halaby – independent study student, for his time and efforts on necessary regular maintenance.
Bibliography

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Design & Aesthetics
- [http://blogs.crankygoblin.com/blogs/geoff.appleby/articles/50712.aspx](http://blogs.crankygoblin.com/blogs/geoff.appleby/articles/50712.aspx) - Dynamic Table Resizing
- [http://design-desire.com/animation_tutorials_3.html](http://design-desire.com/animation_tutorials_3.html) - Animations (Title)
- [http://vimeo.com/4379780](http://vimeo.com/4379780) - Video Hosting
- Flash Slideshow Maker Professional v4.86 [http://www.flash-slideshow-maker.com](http://www.flash-slideshow-maker.com) – Flash slideshow design

Accessibility
- [http://www.printwhatyoulike.com](http://www.printwhatyoulike.com) – Printing
- [http://assistive.usablenet.com/tt/honors.usf.edu](http://assistive.usablenet.com/tt/honors.usf.edu) - Text Only
- [http://www.usf.edu](http://www.usf.edu) – mobile detection script
- [https://www.google.com/analytics/settings/?hl=en#scid=2535267](https://www.google.com/analytics/settings/?hl=en#scid=2535267) – Google Analytics
- [http://www.ie.usf.edu/survey/Login.asp](http://www.ie.usf.edu/survey/Login.asp) - Select Survey
- [http://www.blogger.com/home](http://www.blogger.com/home) - Health Professions Blog

SQL
- [http://www.adit.co.uk/html/sql_for_access.htm](http://www.adit.co.uk/html/sql_for_access.htm) - Access SQL
- [http://www.w3schools.com/sql/default.asp](http://www.w3schools.com/sql/default.asp) - W3C Schools SQL

ASP
- [http://www.asp.net/](http://www.asp.net/) - Microsoft’s ASP site
- [http://www.w3schools.com/asp/default.ASP](http://www.w3schools.com/asp/default.ASP) - ASP Tutorials

HTML
- [http://www.w3schools.com/html/default.asp](http://www.w3schools.com/html/default.asp) - W3C Schools

Javascript
- [http://www.w3schools.com/js/default.asp](http://www.w3schools.com/js/default.asp) - W3C Schools

CSS
- [http://www.bcs.usf.edu/](http://www.bcs.usf.edu/) - Offsite/PDF/Doc/Excel/PowerPoint Automation
- [http://www.w3schools.com/css/default.asp](http://www.w3schools.com/css/default.asp) - CSS W3C Schools
**Optimization**

- [http://validator.w3.org/](http://validator.w3.org/) - W3C HTML validation
- [http://jigsaw.w3.org/css-validator/](http://jigsaw.w3.org/css-validator/) - W3C CSS Validation
- [http://juicystudio.com/services/image.php](http://juicystudio.com/services/image.php) - Image Analysis
- [http://juicystudio.com/services/readability.php](http://juicystudio.com/services/readability.php) - Readability
- [http://www.websiteoptimization.com/services/analyze/](http://www.websiteoptimization.com/services/analyze/) - Speed Analysis

**Communications**

- [http://www.constantcontact.com](http://www.constantcontact.com) - newsletter
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>ASP</td>
<td>Active Server Pages</td>
</tr>
<tr>
<td>AUI</td>
<td>Advisor User Interface</td>
</tr>
<tr>
<td>CSIF</td>
<td>Continuing Student Information Form</td>
</tr>
<tr>
<td>CSS</td>
<td>Cascading Style Sheets</td>
</tr>
<tr>
<td>DBD</td>
<td>Day-By-Day Schedule</td>
</tr>
<tr>
<td>DI</td>
<td>Demographic Information</td>
</tr>
<tr>
<td>FOS</td>
<td>Field of Study (Major)</td>
</tr>
<tr>
<td>FTIC</td>
<td>First Time in College</td>
</tr>
<tr>
<td>HTML</td>
<td>Hyper Text Markup Language</td>
</tr>
<tr>
<td>JavaScript</td>
<td>A client-side programming language</td>
</tr>
<tr>
<td>NSIF</td>
<td>New Student Information Form</td>
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<tr>
<td>ONS</td>
<td>Office of National Scholarships</td>
</tr>
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<td>PSP</td>
<td>Provost's Scholars Program</td>
</tr>
<tr>
<td>RSP</td>
<td>Research Scholars Program</td>
</tr>
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<td>SIF</td>
<td>Student Information File</td>
</tr>
<tr>
<td>SIS</td>
<td>Student Information System</td>
</tr>
<tr>
<td>SQL</td>
<td>Structured Query Language</td>
</tr>
<tr>
<td>SWF</td>
<td>Shockwave flash file (Movie)</td>
</tr>
<tr>
<td>UR</td>
<td>Office of Undergraduate Research</td>
</tr>
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</table>
Appendix A – Navigation Hierarchy

Home

Prospective Students

Honors College Forms

Scholarships

Communications

Community

Honors College

Events

Current Students

Admissions

Requirements

Accreditation

Faculty

Curriculum

Handbook

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Scholarship

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Major

Appointment

Graduate Research

Advisor

Program

General Information

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Calendar

Spring 2011

Fall 2010

Summer 2010

Spring 2010

Fall 2009

Summer 2009

Spring 2009

Computer Lab

Honors Alumni

Honors College Lounge

Honors Housing

Honors College JEOPARDY

Honors LLC

Student Activities

Student Council

Student E-Portfolios

Change of Address

Contact Honors

Know-A-BULL

News

@USFHonors on Twitter

Submit an Article

Online Honors Forms

Printable Honors Forms

Staff (Restricted)

Mentor (Restricted)
Appendix B – SIS Modules

Online Student Forms

- **New Student Information (NSIF)**
  - Collects information from students the Registrar’s office has indicated are Honors eligible. Auto populates and has students verify information received from Registrars office.
  - Information collected includes: desired/guess of major, parents information, nickname, career interest, high school courses taken, college credit expected.
  - Information verified includes: First, Last name, DoB, Home Address, Email Address, Phone Number, Alternate Phone.

- **Continuing/Transfer Student Information (CSIF)**
  - Similar to New Student Information, but for students planning to transfer to the Honors College during their in-progress academics. Collects information on courses taken, and GPA in addition to what is listed above.

- **Summer Orientation**
  - Collects information necessary for Advisors to build student’s initial first-semester schedule.
  - Collects information on days/times of classes desired, living on campus, commuting, prefer morning/afternoon classes.

- **Permit Request**
  - Allows student to request a permit to take an Honors course. Students must have a permit in the system before they are able to register. Collects course desired, year, and semester.

- **Thesis Registration Request**
  - Student must request enrollment in thesis. Processor will validate student meets criteria for enrollment.

- **Scholarship Disbursement Request**
  - If student took multiple Honors courses in one semester, they are eligible to request a disbursement of an additional scholarship during a subsequent semester where they do not take an Honors course.

- **Newsletter Submission**
  - Allows students to submit title, content, link, and URL for consideration in the weekly newsletter.

- **A/V Checkout Request**
  - Check out system for Honors laptops, projectors, printers, cameras, and video equipment.

- **Travel Scholarship**
  - Students may apply to receive a scholarship for travel aboard. Collects information on trip, expected costs, itinerary, sponsoring department, department contact, other funding available, dates of trip, and reason for trip.

- **Apply to be a Tutor**
  - Students may apply to be paid tutors for other students. Collects information on courses taken, grades received, times/days available, subjects desired, previous experience.
• **Apply to Receive Tutoring**
  o Students may apply to receive free tutoring provided by the college.

• **Competitive Scholarship Application**
  o Students may apply semesterly for a set of competitive scholarships. Collects information on current extra-curricular activities, clubs, service organizations, grades, financial need, and other funding.

• **Reference Form Request**
  o Student requests a letter of recommendation. Collects information on students resume, organizations letter will be to, and whether to hold or mail the letter.

• **Research Scholars Application (RSP)**
  o Qualified students are invited to participate in the Research Scholars Program. This is the application and requires an essay and reason for interest.

• **Provost’s Scholarship Program Application (PSP)**
  o Qualified students are invited to participate in the Provost’s Scholars Accelerated Program. This is the application and requires an essay and reason for interest.

• **Thesis Day Presentation**
  o Student requests to present his/her thesis during a semesterly thesis presentation day hosted by the college.

• **Graduation Questionnaire**
  o Information on students fondest college/university memories, plans for after graduation, future contact information, research completed, research published, papers presented and conferences attended.

• **Graduation Exit Survey**
  o Information on the student’s perceptions of the Honors College and the value added by participating. Also information on courses they took, ideas for improvements, and review of staff.

• **“My Events”**
  o A portal for students to view all events they have participated in. Includes sign in date, event, and tallied FreshPeople5 credits received.

**Staff Utilities**

• **Front Desk Tracking System**
  o Students are able to swipe their ID cards at the front desk to sign in for their walk-in or appointment. This populates a list on the front desk staff’s computers with name, who they are seeing, and time waited. Once student is seen, front desk staff sign them in. this populates a set of metrics for # students/day, # students/day of week, # students/advisor, # walk-ins vs. # appointments, average wait time, max wait time, # students/office hour.
• **Student Sign-In**
  - See Front Desk Tracking System.

• **OPS Timecards**
  - OPS staff sign in and out using the check in system. They will see how many hours they have worked upon sign out.

• **Supervisor OPS Tracking**
  - Allows supervisors to track which OPS staff are currently signed in, total hours worked, and past work history.

• **User’s Permissions**
  - Shows each user which SIS utilities they have access to.

• **Password Change**
  - User may change their SIS encrypted password.

• **Status Codes**
  - List of all SIS system codes and their meanings.

• **Flow Charts**
  - Launch pad for flow charts for office tasks.

• **System Log**
  - A running list of all events that have triggered a log entry in the SIS for the last 30 days.

• **System Log ID Search**
  - A search that uses student ID to pull all log events from the system for this particular student. Lists all events in reverse chronological order.

• **Website Traffic**
  - PDF display of the Google Analytics report for website traffic and top content.

• **Newsletter Submissions**
  - Submissions portal for staff to add newsletter items.

• **Newsletter Proof**
  - Authorized staff may proof or edit newsletter submissions.

• **Newsletter Approval**
  - Authorized supervisors may approve/deny/edit/delete submissions.

• **Newsletter Date Change**
  - Change the date and issue number of the newsletter.

• **Newsletter Dean’s Message**
  - Alter/Edit/Delete the Dean’s message at the top of the newsletter.

• **Newsletter – View Currently Approved**
  - View the programmatically created newsletter with all currently approved items. Tags all entries that are less than 7 days old as “New! -”.

• **Newsletter – Text Version**
  - View a textual version of the newsletter. This is used to send to students who are not able to receive HTML emails.
- **Emergency Homepage Alerts**
  - If activated, will place a large red highlighted bar at the top of the homepage. Can be used for emergency school closures, storms, or other vital reports.

- **Did You Know?**
  - A brief description of something the advisors find important that many students may be interested in. changed bi-weekly

- **Graduation Questionnaire Responses**
  - A list of all responses to the Graduation Questionnaire for a desired time period

- **Graduation Survey Responses**
  - A list of all the Graduation Survey Responses for a desired time period

- **Graduation Access Manual Entry**
  - Allows authorized users to manually grant access to the Graduation survey/questionnaire to specific IDs

- **RSVP Status**
  - Status of upcoming events requiring RSVP. Number of students registered/spots allowed

- **RSVP Performance of Past Events**
  - The total number of seats designated for each past event, with the total number of actual participants listed as a percentage

- **FreshPeople5 – Manual Entry**
  - Manual entry option for individual students who did not have their ID card t a FreshPeople5 event.

- **FreshPeople5 – T-shirts**
  - Calculates student’s participation in the FreshPeople5 program and tells front desk staff if student has successfully completed the requirement to earn a college shirt.

- **FreshPeople5 – Attendance Report**
  - Report of all FreshPeople5 attendance for desired time period

- **Calendar – Add Event**
  - Add an event to the programmatically generated calendar that is displayed on the homepage, calendar page, and top of each newsletter

- **Calendar – Edit Event**
  - Delete events in the calendar

- **Calendar – Delete Event**
  - Delete student from congratulations marquee

- **Special Announcements (Homepage) – Add**
  - Special announcements show up on the homepage and are displayed for a specified date range
• Special Announcements – Edit
  o Edit special announcements currently displayed

• Special Announcements – Delete
  o Remove a special announcement before completion of designated date range

• Awards Spotlight
  o Highlights a specific scholarship or award

• IT – Project Request
  o Portal for staff to request additions/modifications to website or SIS, or to report errors or problems. Room for title, project description, start date, due date, business/mission impact, description, and other interested parties

• IT – Open Projects
  o Lists all currently open IT tickets so staff may see where their project is.

• IT – Completed Projects
  o Lists all completed IT projects in last 30 days

• IT – Ticket Edit
  o Allows authorized IT staff to alter outstanding tickets. Once edited, they will automatically email interested users with updates

• IT – Ticket Management
  o List of all outstanding tickets in priority order for authorized IT staff to use.

• Student Information
  o Pertinent academic information for a desired student ID. Also includes students picture

• Person Lookup
  o Uses last name to look up student ID. All SIS utilities require ID. Allows wildcard

• NSIF Forms
  o Access to all New Student Information Forms

• Process NSIF
  o Processing portal for all NSIFs. Allows front desk staff to verify entries, alter information, and add notes before activating student.

• Print NSIF
  o Allows staff to print specific NSIF Form

• Process CSIF
  o Same as NSIF processing

• Print CSIF
  o Same as NSIF printing

• Import Recruit List
  o Imports list of qualified students for Honors from .csv list received from Registrar’s office. Emails students with welcome from Dean and information on completing NSIF.

• Print Recruit mailing labels
  o Prints mailing labels for import done that day to be used to mail invitation letters
- **Add Special Admit**
  - Add student to recruit list who otherwise does not meet standard criteria
- **Student Status Change**
  - Change SIS status of student
- **Research Applications Processing**
  - Process Research Scholars applications. Decision is made on form and system notifies student via email of the decision. Also room for processor to make notes for student. Will activate student’s record as research scholar if accepted.
- **Research Scholars – Add Exception**
  - Add an otherwise non-general criteria student to Research Scholars pool
- **Advisor’s User Interface**
  - Students Picture, entry term, major, status, email, phone, minor, special attributes, notes, thesis information, honors courses and grades, and all notes made by advisors.
  - Has portal for advisors to create notes for each students visit for advising.
  - Notes are entered into database, emailed to student.
  - Also includes information on student’s freshman orientation and notes from student’s mentor.
- **Orientation – Day-By-Day Schedules**
  - A 6 day hourly spreadsheet where front desk staff can enter a student’s first semester thesis in more user friendly form.
- **Orientation Forms & Registration**
  - Processing portal for summer information form. Allows authorized advisors to validate information, add information on preliminary schedule, and makes notes. Also processes student for attendance at an orientation session
- **Email Orientation No-Shows**
  - Emails all students not checked in to the morning information session to the registrar’s office for removal from Honors
- **Change Mentor**
  - Changes a student’s designated student mentor for orientation
- **Change Orientation/Repeat Date**
  - Changes students date or repeat date for summer orientations
- **Orientation Advisor Report**
  - List of all students expected at a specified orientation session. Includes student contact information. Organized by assigned professional advisor
- **Continuing Student (CS) Information Sessions**
  - Lists all upcoming continuing student information sessions
- **CS Date Add**
  - Add a date for a continuing student information session
- **CS Sessions Requests**
  - Process request from non-honors students to attend session
<table>
<thead>
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<th>Service</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td><strong>CS Session Check-In</strong></td>
<td>Check students in on day of session</td>
</tr>
<tr>
<td><strong>CS Session Utility</strong></td>
<td>Make admissions decision on student after session. Notifies student of decision via email and updates their status code to reflect decision.</td>
</tr>
<tr>
<td><strong>CH List</strong></td>
<td>List of all students placed on hold because of pending grades for admission as continuing student</td>
</tr>
<tr>
<td><strong>CS Date Search</strong></td>
<td>Search for lists of expected attendees for specified session date</td>
</tr>
<tr>
<td><strong>Thesis Records</strong></td>
<td>List of all students thesis. Includes information on title, status, completion date, mentor, department, contact information, funding disbursed, grade, and abstract</td>
</tr>
<tr>
<td><strong>Permit Processing</strong></td>
<td>Processing portal for permit requests. Emails student decision and has room for processor’s comments to student</td>
</tr>
<tr>
<td><strong>Thesis Registration Processing</strong></td>
<td>Processing portal for thesis registration requests. Emails student decision</td>
</tr>
<tr>
<td><strong>Travel Abroad Processing</strong></td>
<td>Processing portal for thesis registration requests. Emails student decision. If approved, emails funding personnel for scholarship disbursement</td>
</tr>
<tr>
<td><strong>Competitive Scholarships Processing</strong></td>
<td>Processing portal for students requesting honors scholarship during non-honors course semester. Emails student decision and if approved to funding personnel</td>
</tr>
<tr>
<td><strong>Scholarship Special Disbursement Processing</strong></td>
<td>Available queries to be run against SIS raw data and presented as a tabular output. May be viewed on screen and sorted by any column in ascending or descending order. May also be exported to MS Excel for further processing.</td>
</tr>
<tr>
<td><strong>Freshmen Mass Email</strong></td>
<td>Sends mass email to all freshmen assigned to a specified academic advisor.</td>
</tr>
<tr>
<td><strong>Student Contact Change</strong></td>
<td>Change contact information for student, including last name (keeps former last name as maiden), email address, alternate email, phone, alternate phone, address, alternate address.</td>
</tr>
</tbody>
</table>
Mentor Utilities

- **Mentee List (By mentor)**
  - List of all of mentor’s students for current year
- **Mentor Emails**
  - List of all mentors emails
- **Catalog**
  - Access to university’s course catalog for current year
- **Student Sign In**
  - Sign in utility for current date. Brings up students anticipated major for verification, and tags student with timestamp and mentor’s ID who signed them in.
- **Mentor Work Schedule**
  - List of all mentors and their schedules for current year
- **Mentor Assignments**
  - List of mentors # of students assigned/session for remainder of year
- **Student Records (By ID)**
  - Brings up students mentor advising record by ID
- **Mentee List (whole)**
  - List of all incoming freshmen with link to their mentor advising record
- **Student Pictures**
  - List of all students pictures for incoming year
- **Change Mentor**
  - Portal to change specified student’s student mentor
- **Student Pending**
  - # of students currently signed in pending advisor schedule approval
- **Student Approved**
  - # of students currently signed in who have already been approved
- **Students Checked-In**
  - # of students currently signed in.
Appendix C – Public Presentation
**Introduction**

The creation and management of accurate up-to-date information regarding a student’s academic career is critically important to the management of a university.

This presentation will focus on the design of the user interface, with emphasis on usability and user comprehension.

* Academic information has been redacted for student privacy.
Design and Implementation of a Comprehensive Student Information System (SIS) and User Interface (UI) for the USF Honors College

### Background – Http://honors.usf.edu

<table>
<thead>
<tr>
<th>Site</th>
<th>Usage</th>
<th>Traffic</th>
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<tr>
<td>413 Total Pages</td>
<td>1,568 Newsletter Posts</td>
<td>167,109 Unique Visits</td>
</tr>
<tr>
<td>9,108 Total Files</td>
<td>373 Calendar Events</td>
<td>552,346 Page Views</td>
</tr>
<tr>
<td>796 MB Site</td>
<td>4,462 Event Attendees</td>
<td>79,307 Unique Visitors</td>
</tr>
<tr>
<td>54.1 MB Data</td>
<td>91 Registered Users</td>
<td>31.91% Direct Traffic</td>
</tr>
<tr>
<td>12,452 Records</td>
<td>2,012 Student Users</td>
<td>143 Countries</td>
</tr>
<tr>
<td>42,328 Log Entries</td>
<td>22,438 Form Submissions</td>
<td>5:18 Avg. Time on Site</td>
</tr>
</tbody>
</table>

Source: Google Analytics, SIS System Logs; 03/18/2010

### Objectives

- Usability & User Comprehension
- Data Integrity & Validation
- Visual Conformity
- Efficiency & Convenience
- Strong Error-Handling System
- IT Ticket Management System
Design and Implementation of a Comprehensive Student Information System (SIS) and User Interface (UI) for the USF Honors College

**Design Constraints**

- USF Web & Data Guidelines
- Users with Limited Computer Knowledge

**Languages**

- **HTML** – Basic Layout
- **CSS** – Global Styling
- **ASP** – Real time content development and data organization.
- **SQL** – Data management, retrieval, and storage
Design and Implementation of a Comprehensive Student Information System (SIS) and User Interface (UI) for the USF Honors College

Visibility

• Search Engine Visibility
• URL Recognition
• Inbound Links
• Directories

Accessibility

• “Best Practices”

• Text Only & Printer Friendly
  Software generates live text-only versions of all pages.
  A printer friendly feature programmatically removes background, superfluous images and formatting, menu bar, header, and footer.

Text-only homepage
Accessibility

• Mobile Device Friendly Site

If server side logic determines a request originated from a mobile device the mobile device application is launched.

This system is designed to load nearly instantly, and provides admissions information for the college and allows access to most popular forms.

Accessibility

• Search

A sitemap and Google Custom Search are provided for ease of access to desired information.
Design and Implementation of a Comprehensive Student Information System (SIS) and User Interface (UI) for the USF Honors College

Form Design

• Auto fill
• Required Fields
• Layout
• Understandable
• Logical Order

Other Methods

Student Information

Upload Recruitment.csv from Registrar
Now What?

• **Data** are plain facts.

• When data are processed, organized, structured or presented in a given context so as to make them useful, they are called **Information**.

http://www.diffen.com/difference/Data_vs_Information

---

**Form Validation**

• **Client Side**

• **Server Side**
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**Storage**

- Database

Table:

- Date/Time: Activity/Date
- First Name
- Last Name
- Email
- USFID
- Major

<table>
<thead>
<tr>
<th>#</th>
<th>Activity/Date</th>
<th>FirstName</th>
<th>LastName</th>
<th>Email</th>
<th>USFID</th>
<th>Major</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3/3/2010 7:22:23 PM</td>
<td>Ellen</td>
<td>Klein</td>
<td></td>
<td></td>
<td>Biomedical Science</td>
</tr>
<tr>
<td>3</td>
<td>3/18/2010 11:20:06 PM</td>
<td>Anna</td>
<td>Williams</td>
<td></td>
<td></td>
<td>Biomedical Science</td>
</tr>
<tr>
<td>5</td>
<td>3/21/2010 9:05:26 AM</td>
<td>Frank</td>
<td>Davis</td>
<td></td>
<td></td>
<td>Criminology</td>
</tr>
</tbody>
</table>

Total: 5

**Processing**

- User notification system
  - Automated emails
  - On screen styling

**Orientation Forms**

- Staff Access

- [Image of Orientation Forms]
Design and Implementation of a Comprehensive Student Information System (SIS) and User Interface (UI) for the USF Honors College

Benefit

Orientation Access

- Mentor List (My Mentor)
- Student Record (By USFID)
- Mentor List (Whols)
- Student Pictures
- Mentor Info
- Advising Manual
- USF Catalog
- Student Sign In

Upcoming Honors Events
- My Events
- 3/24: Poster Presentation Skills Workshop
- 3/24: Oral Presentation Skills Workshop
- 3/25: Dinner with Professor Bishop
- 3/25: An Afternoon with Tony Bennett
- Pearl Mosque 5/Event: Honors College LLC Event

IT Ticket Management

HIT Team Ticket Status

System Log

Date: 2/19/2010
Time: 3:46 PM
Description: Created ticket from template

Date: 2/19/2010
Time: 3:45 PM
Description: Created ticket from template

Date: 2/19/2010
Time: 3:44 PM
Description: Created ticket from template

Date: 2/19/2010
Time: 3:43 PM
Description: Created ticket from template

Date: 2/19/2010
Time: 3:42 PM
Description: Created ticket from template
Results

<table>
<thead>
<tr>
<th>Increased</th>
<th>Decreased</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data integrity</td>
<td>Non-value added activity</td>
</tr>
<tr>
<td>User access &amp; convenience</td>
<td>Data duplication</td>
</tr>
</tbody>
</table>

Conclusions

The SIS system is expected to:

- Increase the efficiency of the college's record management
- Decrease time required to access and deliver student records
- Decrease time spent on non-value added tasks
- Increase ability of staff to better serve the student population.
Design and Implementation of a Comprehensive Student Information System (SIS) and User Interface (UI) for the USF Honors College

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Thank You!

Questions?

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