



IS 636: Structured System Analysis and Design

Deliverable 5 : Design

Project Title: Enhanced Course Enrollment and Notification System

Group Name: Digital Catalysts

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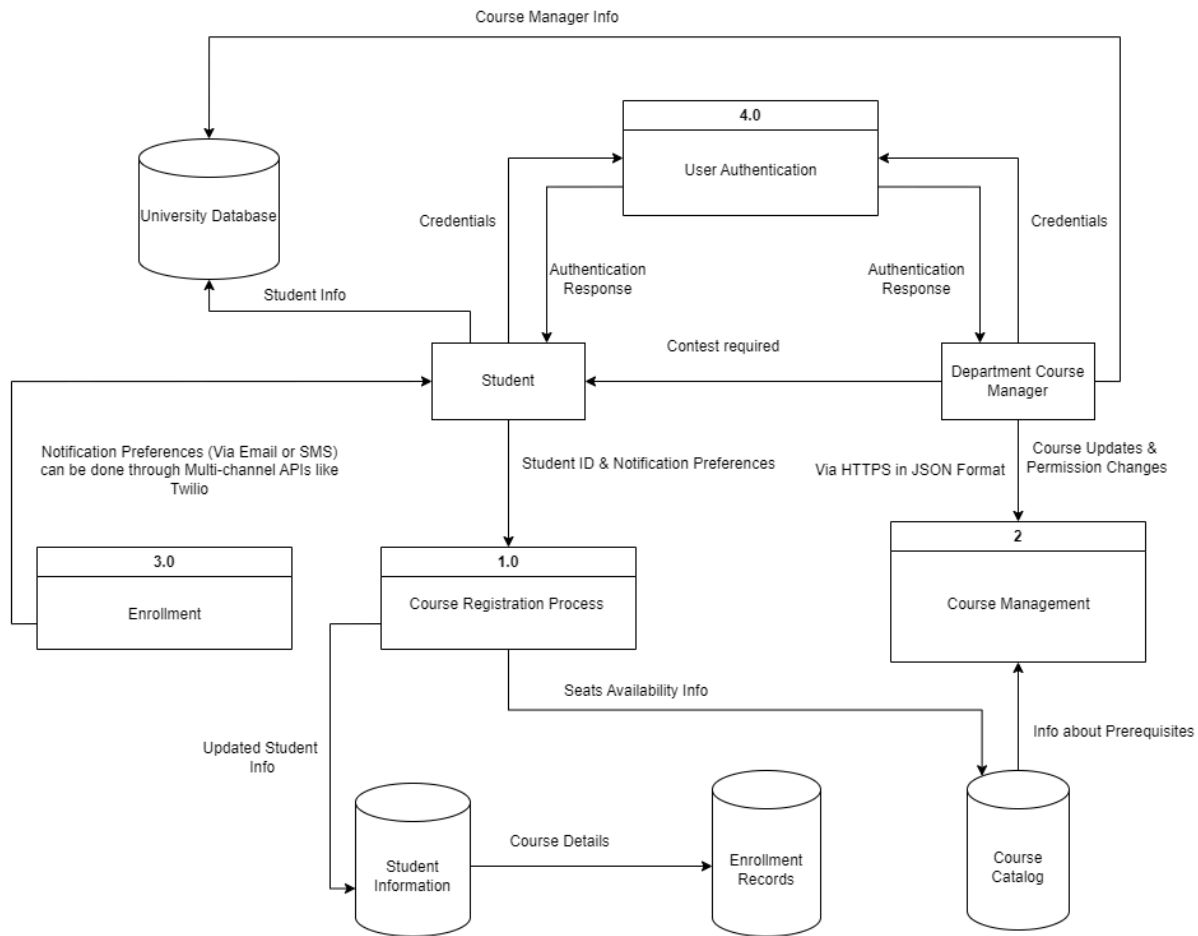
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INDEX

1. Physical Process Model	3
2. User Interface Design	
A. Interface Structure Design	5
B. Interface Convention and Standards	7
C. Interface Design Prototype	8

1. Physical Process Model:



Step 1: User Verification

Logging in is how both department course supervisors and students begin interacting with the system. After they submit their credentials, they are checked against records kept in the University Database, particularly those pertaining to the student and instructor information sections. When their authentication is successful, they can access the functions they are entitled to within the system.

Step 2: Course Registration Process

This phase is only for students who register for courses after completing their authentication successfully. The procedure entails:

- **Verifying Seat Availability:** Information about seat availability is retrieved from the course catalog throughout the course registration process.

- Registration and Notification: Students' data is updated in the Student Information database when they register for a course. Additionally, they configure notification preferences, which can be controlled by multi-channel APIs such as Twilio for SMS or email correspondence.

Step 3: Course Management

Department supervisors oversee the course offerings after logging in and confirming their identity. This comprises:

- Updating Course Information: Managers have the authority to change the prerequisites and seat availability of any course that is listed in the Course Catalog.
- Notifications and Permissions: Modifications are fed back into the system and may cause notifications to be sent to students who may be impacted. Data transmission for this operation is done via secure HTTP connections using the JSON format.

Data Stores and Flows:

- University Database: All user credentials and basic profile data are housed in one central location. It facilitates authentication by giving the required teacher and student details.
- Enrollment records and student information: Compiles all information pertaining to students' personal data, changes, and course registrations.
- Course Catalog: Keeps track of all the specifics of a course, such as prerequisites and available seats. The Course Management procedure accesses and updates it on a regular basis.

Step 4: Enrollment and Updates

After students register for courses:

- Enrollment Confirmation: Students are officially enrolled, with records updated in the Enrollment Records and Student Information databases.
- Updated Student Information: Reflects any new courses students are enrolled in and any changes in their academic records, ensuring the student profile is always current.

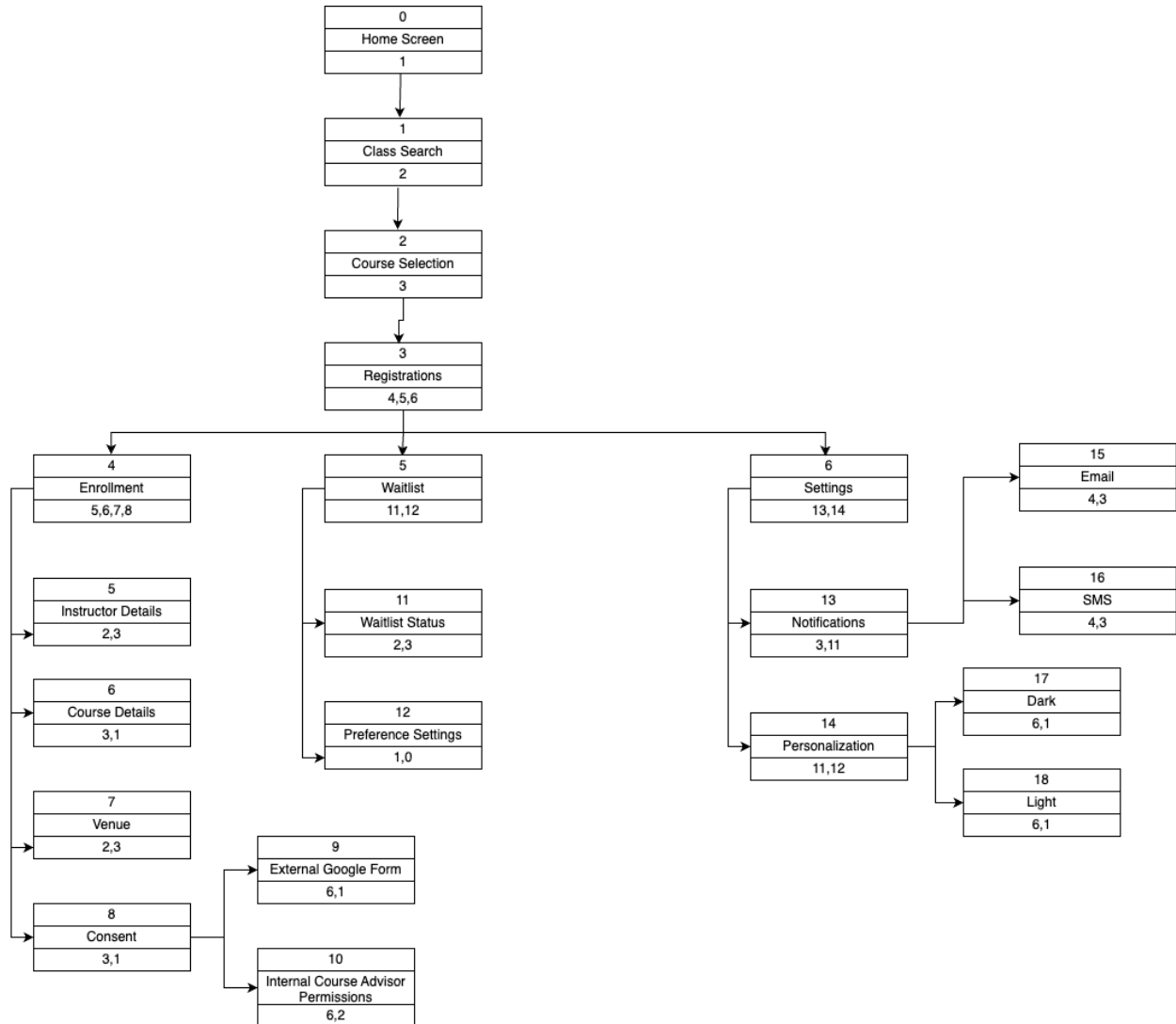
Integration of System Components:

- Seamless Data Flow: Information about students and courses flows efficiently between processes and data stores, ensuring that all components of the system are synchronized and up-to-date.

- Security and Data Integrity: Use of HTTPS for secure data transmission, especially in updates and notifications, ensures that data integrity and privacy are maintained across the system.

2. User Interface Design

A. Interface Structure Diagram



Navigating the Course Management System:

The diagram provides instructors and students with an organized way to navigate the course management system, starting at the Home Screen (0). This starting point is crucial for users to orient themselves within the application and move to more specific functionalities.

Class Lookup and Course Selection:

Through the Class Search (1), users can explore a variety of course options from the Home Screen. To filter and find courses that fit their academic interests or teaching duties, users must use this section. Users navigate to the Course Selection (2) area after locating the appropriate courses, where they can look over more information about the courses and choose which ones to take.

Enrollment and Instructional Administration:

After choosing a course, customers proceed to the Registrations (3) procedure, which is a crucial intersection that leads to various essential features:

Enrollment (4): This is where students complete their registration for courses. Real-time adjustments to the Student Information database are reflected in the system's processing of these enrollments.

Waitlist (5): Users can choose to join waitlists for courses that are completely reserved. They can control the status of their waitlist and customize how they want to be updated using this interface.

Specific Course Details:

Users can obtain comprehensive data, including Instructor Details (6), Venue (7), and Consent (8), during the enrolling process. Making informed judgments is further aided by the comprehensive information about the course logistics provided in these parts.

Additional Features:

For further requirements and outside actions:

For purposes like submitting feedback or gathering additional data, an External Google Form (9) is integrated.

Internal user roles and permissions are managed by the Internal Course Advisor Permissions (10), which guarantees correct maintenance of administrative activities.

Customization and User Preferences:

Comprehensive Settings (11) are also included in the system to control user preferences and notifications. Here's where users can:

You may control how they receive critical updates and information by adjusting the Notifications (12) settings.

Use the Personalization (13) options to personalize their experience. To improve usability and visual comfort, select themes like Dark (14) or Light (15).

Advanced Functionalities:

The system provides capabilities for Grade Retrieval and Waitlist Status, allowing students to effectively manage their course engagements and actively follow their academic progress, thus further improving the academic experience.

B. Interface Convention and Standards

The course management system is made with great care to follow strong standards and conventions for interface design, which guarantees accessibility, consistency, and usability. Maintaining uniformity in navigation and interface components is essential as it creates a dependable and recognizable atmosphere that lowers the learning curve and improves user comfort. Across different interfaces, elements like buttons and dropdown menus are standardized and positioned consistently, making them easier to operate and more comprehensible. Additionally, the system provides thorough visibility and feedback, guaranteeing that users are informed by means of instantaneous feedback methods like loading indications and confirmation messages. Clear and useful error messages greatly improve user interaction by lowering user annoyance.

The system is inclusive and supports all users, regardless of ability, thanks to accessibility features. This makes the system accessible to a larger audience and includes features like keyboard navigability, high contrast themes for better readability, and ARIA labels for interactive controls. Ensuring a secure user experience, security measures are strictly enforced, including encrypted data transmissions and stringent access controls to safeguard sensitive information. Furthermore, the system's adaptability lets users personalize everything from navigation accelerators to interface themes, satisfying the needs of both inexperienced and seasoned users.

The course management system provides an efficient, safe, and joyful experience in addition to fulfilling the functional needs of its users by incorporating certain interface conventions and standards. Better engagement and productivity are encouraged by the system's excellent support

of administrative and academic operations, which is ensured by its comprehensive approach to design and functioning.

C. Interface Design Prototype

Screen 1 Waitlist Indicator and Notification Preferences buttons:

myJUMBC

01-LEC (2087) 1 MoWe 10:00 am 11:15 am Janet & Wal Tera Reynolds 3 9/22 Main Campus In Person

CLASS NOTES
Students outside of the IS/HCC MS programs wishing to take this course must request permission via this Google form: https://docs.google.com/forms/d/e/1FAIpQLSe1_yogzitCn76Z7TjLUdofwLP3HiZpaFITKEXkFe-0FIOug/viewform?usp=sf_link

Special Topics in Information Systems | IS 698

SECTION	TOPIC	SESSION	DAYS	START	END	ROOM	INSTRUCTOR	UNITS	STATUS	CAMPUS	INSTRUCTION MODE
> 01-LEC (2268)	The User Ex...	1	TuTh	1:00 pm	2:15 pm	Janet & Wal	Anita Komlodi	3	11/25	Main Campus	In Person
<p>CLASS NOTES Students outside of the IS/HCC MS programs wishing to take this course must request permission via this Google form: https://docs.google.com/forms/d/e/1FAIpQLSe1_yogzitCn76Z7TjLUdofwLP3HiZpaFITKEXkFe-0FIOug/viewform?usp=sf_link</p>											
02-LEC (2322)	Ethical & Re...	1	We	4:30 pm	7:00 pm	Information	James Foulds, S	3	3/5 0/25		In Person
<p>CLASS NOTES In this course, students will explore the concepts of responsible and ethical artificial intelligence. We will discuss the ethical and social concerns surrounding the use of AI technologies as well as strategies that can help manage their risks and mitigate their negative impact. Some of the main topics we will discuss include bias/fairness, privacy and sustainability concerns in various AI systems such as social media applications, ethical issues for NLP systems, especially Large Language Models/ChatGPT, deepfakes and face recognition. Students outside of the IS/HCC MS programs wishing to take this course must request permission via this Google form: https://docs.google.com/forms/d/e/1FAIpQLSe1_yogzitCn76Z7TjLUdofwLP3HiZpaFITKEXkFe-0FIOug/viewform?usp=sf_link</p>											
> 03-LEC (2323)	Neurosymo...	1	Th	4:30 pm	7:00 pm	Janet & Wal	Houbing Song	3	25/25	Main Campus	In Person
<p>CLASS NOTES Neuro-symbolic AI is an emerging subfield of AI that brings together two hitherto distinct approaches. „Neuro“ refers to the artificial neural networks prominent in machine learning, „symbolic“ refers to algorithmic processing on the level of meaningful symbols, prominent in knowledge representation. In the past, these two fields of AI have been largely separate, with very little crossover, but the so-called „third wave“ of AI is now bringing them together. Neurosymbolic AI has the potential to enable next generation AI systems. For example, by integrating symbolic reasoning with data-driven learning, neurosymbolic AI algorithms enable robust, assured, and therefore trustworthy systems. The use of both approaches in the same AI system has cognitive support, such as fast and slow thinking, wherein deep learning plays the role of fast thinking and the symbolic approach plays the role of</p>											

Screen 2: Permissions Overview

myJUMBC

Class Search

Select all the required (*) search criteria.

Term: Summer 2024 Acad Career: Graduate Subject: ENMG - Engineering M... Catalog # Notification Type

More Filters 3

Search Reset Filters

☒ Show Open Classes Only

Project Management Fundamentals | ENMG 650

SECTION	TOPIC	SESSION	DAYS	START	END	ROOM	INSTRUCTOR	UNITS	STATUS	CAMPUS	PERMISSIONS
> 01-LEC (2514)	-	12W	Tu	4:30 pm	7:40 pm	Information	Jeffrey Ray	3	1/25	Main Campus	Departmental Consent
<p>CLASS NOTES This course is offered part online + part in person</p>											

Management, Leadership and Communication | ENMG 652

SECTION	TOPIC	SESSION	DAYS	START	END	ROOM	INSTRUCTOR	UNITS	STATUS	CAMPUS	INSTRUCTION MODE
> 01-LEC (2515)	-	12W	Mo	4:30 pm	7:40 pm	Information	Chris Haug	3	16/25	Main Campus	Hybrid
<p>CLASS NOTES This course is offered part online + part in person</p>											

Engineering Law and Ethics | ENMG 656

Screen 3: Course Registration Form

The screenshot displays the 'myUMBC' Course Registration Form. On the left is a navigation sidebar with links for Profile Home, Degree, Class Information, Registration (including Course Catalog, Class Search, My Schedule, Schedule Builder, Edit Enrollment, Add Classes, Swap Classes, Drop Classes, and View Wait List), Financials, and PeopleSoft Full Site. The main content area is titled 'Class Search' and includes a search bar with 'Term: Summer 2024' and a 'More Filters' button. Below this is a 'Search' button and a checkbox for 'Show Open Classes Only'. The search results are categorized by 'SECTION' and 'CLASS NOTES'. The first section is '01-LEC (2514)' under the category 'Project Management F'. The second section is '01-LEC (2515)' under the category 'Management, Leadersh'. The third section is '01-LEC (2516)' under the category 'Engineering Law and E'. The right side of the form is titled 'External Course Registration' and includes a course code 'ENMG-650', a user profile for 'saisriharshakumbam@gmail.com', and a 'Not shared' status. Below this are input fields for 'Student Name *', 'Campus ID', and 'Department' (with options for IS and DS). A 'PERMISSIONS' section on the right includes a 'Departmental Consent' button. At the bottom, there is a table with columns for SECTION, TOPIC, SESSION, DAYS, START, END, ROOM, INSTRUCTOR, UNITS, STATUS, CAMPUS, and INSTRUCTION MODE. The first row shows '1092 x 825' in the UNITS column.

To give students a complete picture of their academic standing, the Enhanced Course Enrollment and Notification System's User Dashboard is built as a primary center. It has features like a Waitlist Status Indicator for real-time updates on waitlist movements and an Enrollment Status Overview that shows current enrollment and comprehensive course details. Additionally, the interface has Course Management features that let students seek enrollment across departments, add or remove courses, and manage all correspondence relating to their courses through a Notification Center. To guarantee maximum accessibility across a range of devices, the interface is designed using responsive design.

Another essential element is the course registration form, which is designed to streamline the registration procedure, particularly for cross-departmental courses that call for extra authorization. It offers unambiguous feedback following the successful submission of registration forms, real-time confirmation of seat availability and prerequisites, dynamic search and filtering capabilities, and direct workflow integration of consent forms.

Students can also personalize their communication options through the Notification options Settings interface. Students can select which events to receive information about, as well as their preferred notification methods (such as SMS, email, or app alerts). They can also verify these configurations using the verify Notification function to make sure everything is set up correctly. By providing flexibility, transparency, and real-time interaction with the course enrollment system, this toolkit aims to improve student happiness.

