

IPRO 335:  
Renovation of Alumni Memorial Hall  
Spring 2007

# Project Plan

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## 1.0 Objectives

IPRO 335's objective is to focus on starting the renovation and design of Alumni Memorial Hall used by the Civil and Architectural Engineering Department. This is the first semester this IPRO has been offered. Our main goal and objective is to research and analyze the current building in place, and begin a schematic design for Alumni Memorial Hall including the structural, mechanical, and electrical systems. We are setting the groundwork for this IPRO to be furthered in future semesters.

## 2.0 Background

Alumni Memorial Hall is one of the oldest buildings on the campus. It is in need of a major renovation to bring it up to code for heating and cooling, ADA, technology and conditions to enhance the learning environment for its users. The one thing that makes this renovation so difficult is that Alumni has been renovated in bits and pieces so many times in the past that it is simply impossible to be aware of all the existing conditions. Many different components need to be looked into for the entire renovation of the building from the mechanical and electrical systems, the physical structure of Alumni Memorial, and the future of the CAE department with regards to the curriculum.

Careful consideration is being taken in this project in terms of historical preservation. Alumni Memorial Hall was Mies Van Der Rohe first academic building on the campus of The Illinois Institute of Technology. Careful consideration needs to be looked at with the regulations and limitations that are set in National Historic Preservation Guidelines for renovation of a historic location.

This is also a very unique IPRO being offered because the entire team has been split into three smaller teams all doing their respected major's work to contribute to the entire project. What makes it extremely beneficial is this is not only a very realistic project with the work possibly getting done in the near future, but this is also the way a true renovation commission is set up with regards to the architects collaborating and consulting with both civil and architectural engineers.

## 3.0 Methodology/Brainstorm/Work Breakdown Structure

The focus for IPRO 335 this semester is doing a complete analysis of everything in Alumni Memorial Hall and the wants and needs of the users of the building. The team's overall methodology to getting the work done is

splitting the tasks on a week by week basis in each small group. Our clients gave each group task that they expect us to incorporate into the initial design and analysis of Alumni Memorial Hall.

The three groups' leaders bridge the communication so each team has an understanding as to what work is being completed and the manner in which it is being completed in. Certain people are designated as the communicators with specific people in each group that are doing similar task and projects. Each group will also be responsible for the presentation and the displays that will be used at IPRO day. It is the work of the three project managers to compile all the work their group has done and put it into a report that can be used for future IPROS to use on this project.

## 4.0 Expected Results

The expected results of IPRO 335 Renovation of Alumni Memorial are to achieve an academic site that not only encompasses historic value but also accommodates students and staff needs.

### Architecture:

Analysis of the existing program and usage of the current building will play a key role into how the new building will be organized. We need to bring the current building up to meet ADA requirements and building codes that are not being followed. Within our design we hope to have a presentation drawing of a possible solution to the renovation and possible addition to Alumni Memorial Hall. We know that most of the exterior can not be changed due to historical requirements but a majority of the exterior façade repairs will be with the glass and window walls.

For the final presentation to our clients we want to have a good set of floor plans that include the new additions and show the areas that were demolished. We also want to show where each department's lab will be located within either Alumni Memorial or another location on campus. We also want to have 3-D perspectives and a walk through in order to give our client an idea of how the space will look and feel once renovated.

### Civil and Structural Engineering:

Analysis of the existing structure will be required to determine if any urgent structural repair will be necessary. In addition, should any additions to the structure be needed, different options will need to be investigated, and their feasibility considered. The task of the civil and structural group will be to conduct this existing analysis and feasibility study.

Existing System Analysis:

This task involves research to determine the code requirements of the original building, and if current code needs to be applied to the current system. A structural model will be created in SAP2000 to assist in the analysis of the existing condition. Should any urgent renovation be required, structural retrofits will be proposed and designed.

Feasibility study:

Based on the condition of the existing structure, the group will undergo a feasibility study of possible renovations that the architects would like to see in the building. This will involve research to determine if the existing structure will need to be brought up to current code. Brainstorming will occur to create possible structural solutions. The proposed structures will be analyzed, and their feasibilities will be determined.

### Architectural Engineering:

In performing this renovation we hope to achieve a building that has efficient energy consumption as well as helping the University with energy savings. By completing the renovation of Alumni Memorial we will improve the building's ongoing operations and maintenance.

By evaluating the current building's energy and acoustical state we can identify problem areas and effectively improve areas that cause concerns in cost as well as health. In order to achieve these results IPRO 335 will have to conduct several walkthroughs and test various areas throughout the building throughout different times of the day for an ongoing period of time.

Doing so will help IPRO 335 accumulate statistical data that can objectively be evaluated to determine needs of improvement. IPRO 335 will also have to conduct interviews with current occupants to obtain information regarding comfort levels and concerns. Also by working with advising faculty to identify problematic areas throughout the building should help achieve these goals.

## 5.0 Project Budget

<b>Item</b>	<b>Quantity</b>	<b>Cost</b>	<b>Total</b>
Posters	3-(3' x 4')	\$5.00/LF	\$60.00
Poster Display Board	3	\$5.00	\$15.00
Misc. Expenses		\$20.00	\$20.00
	<b>Grand Total</b>		<b>\$95.00</b>

## 6.0 Schedule of Tasks and Milestone Events

### Architecture:

Jan 23 - Code and Historical Research Complete  
 Jan 30 – Estimate of Renovation Cost  
           Working Drawing Complete  
 Feb 6 – Questionnaires and Surveys Done  
 Feb 22 – Interviews and Surveys Complete  
 March 1 – Results Compiled from surveys and interviews  
 March 8 – Completed Program with adjacency diagrams  
 March 27 – Schematic Design complete  
 April 3 – 3D Walk through complete  
 April 10 – Presentation Drawing complete  
 April 17 – All group presentations compiled  
 April 24 – Presentation Rehearsal  
 April 27- Project Presentation to Clients

### Civil and Structural:

#### Code Research:

Jan 22 – Start code research  
 Jan 29 – Acquire required building codes  
 Feb 5 – Search for original building code  
 Feb 19 – Determine minimum loads for existing structure  
 Mar 5 – Minimum loads for proposed additions determined

#### Current Structural System Investigation:

Jan 22 – Begin investigation of current system  
 Feb 5 – Soil report acquired  
 Feb 12 – Design material specifications determined  
 Feb 26 – Tested material specifications determined if tests have occurred in the past

**Structural Analysis of Existing Structural System:**

Feb 12 – Begin SAP model of existing structure

Feb 26 – Complete SAP model of existing structure with current loads

Mar 5 – Complete analysis of existing structure and determine if renovation for current loads is required

**Feasibility Study for Proposed Additions:**

Mar 5 – Make additions to existing structural model to reflect possible changes

Mar 19 – Begin study of feasibility of additions, and what structural changes may be necessary to allow for the additions

**Design of Retrofits:**

Mar 5 – Begin design of structural retrofits if necessary

**Architectural Engineering:****Determine Existing Conditions**

Start: 16 Jan 2007

End: 28 Feb 2007

Building Walk Through

Documentation - Data from instruments

Data Collection  
Output from instruments

Documentation - Photos  
Collection/Research

External Data  
Facilities  
Current Occupants

Previous IPRO  
Drawings

**Model existing conditions**

Start: 01 Mar 2007

End: 31 Mar 2007

Energy  
GBS Energy Model  
Energy Codes  
Current Codes  
Plumbing  
Occupant Requirements  
Current Codes  
Occupant Requirements

ADT Model  
eQuest  
Electrical System  
Occupant Requirements  
Current Codes  
Life Safety  
Acoustics  
Recommend Upgrades

Recommended Upgrades  
 Start: 01 April 2007  
 End: 20 April 2007

Mechanical  
 Plumbing  
 Safety

Electrical  
 Acoustics

## 7.0 Individual Team Member Assignments

### Architectural Team:

This sub team is responsible for the following:

- Determine the existing building layout and construction from historical and current building plans and existing construction.
- Interview current building occupants to determine current usage and future needs.
- Develop a new building programming plan and floor plan.
- Complete an accessibility analysis of the existing building and develop a set of accessibility requirements and for the renovated building according to current Chicago and IBC building code.
- Work with AE's to develop a resource audit which documents the current electricity, water, and hot water (heating) usage of the current building.
- Work with engineers to develop a first estimate of cost to renovate the building.

Brad Ford Architect of Record (Research the CBC and IBC for requirements on design. Created a parametric estimate for the renovation and possible addition to Alumni Memorial hall. Responsible for organizing the three teams, the Architecture team and their respected tasks.)

Youjong Kim Architect (Assisted in creating a full set of working drawings of what has been currently been built. Develop questionnaires and interviews for the students of the CAE department. Develop the program based on results from questionnaires and developed the schematic design.)

Hyunjoo Oh Architect (Assisted in creating a full set of working drawings of what has been currently been built. Develop

questionnaires and interviews for the students of the CAE department and developed the schematic design.)

Rebekah Reid Political Science: (Research historical designation and precedent of renovating historical academic buildings on campus. Also looking into funding from federal government and department of the interior.)

Nataniel Woods Architect (Research the Chicago Building Code for ADA. Researched LEED requirements and a possible designation. Conduct interviews with the full time staff of the CAE department, and developed the schematic design.)

## Civil Team:

This sub team is responsible for the following:

- Investigation of required minimum design loads and combinations
- Investigation of existing structural systems
- Structural analysis of existing structural system
- Feasibility study for structural additions
- Design of structural retrofits, if necessary

The team will be assigning tasks to members as they come up in the schedule. The group members have similar backgrounds, and as members are available for further tasks, they will be assigned to them.

Alek Babel	Structural Engineer of Record (Responsible for organizing team and tasks)
Dan Dow	Structural Engineer
Syed Kazi	Structural Engineer
Matt Helland	Structural Engineer
Jared Szajokowski	Structural Engineer
Prince Tambah	Structural Engineer



Architectural Engineer Team:

This sub team is responsible for the following:

- Analysis of the Chicago Building Code and the International Building Code.
- Analysis of existing mechanical systems and comparison to the current requirements.
- Analysis of existing electrical systems and comparison to the current requirements.
- Analysis of existing plumbing systems and comparison to the current requirements.
- Use guidelines determined by the Architecture sub team in order to determine necessary mechanical renovations, including but not limited to soundproofing and insulation.
- Work with Architecture sub team to develop an energy and water use audit to be compared to current resource use codes.

<u>Matt Gibbs</u>	Architectural Engineer (Research the Chicago Building Code and International Building Code. Obtain use of materials and machines to identify the current condition of the building. Coordinate building walk through. Identify and compare electrical systems to code requirements. Organize presentation, the Architectural Engineering group and their tasks. )
<u>Tamakia Edwards</u>	Architectural Engineer (Research and obtain data on energy usage and design of the building. Determine energy management. Determine energy use and conservation. )
<u>Jeffrey Uecke</u>	Architectural Engineer (Research energy and design software. Research and become familiar with LEED. Determine materials used throughout the building. Identify and compare plumbing systems to code requirements.)
<u>Steve Uecke</u>	Architectural Engineer (Research energy and design software. Research and become familiar with the Chicago Building Code. Determine materials used throughout the building. Create an energy model. )
<u>Celeste Wegrzyn</u>	Mechanical Engineer (Research the CBC and IBC. Collect data during building walk through. Identify and compare mechanical systems to code requirements. Assist with presentation. )

Tania Atanassova Architectural Engineer (Main communicant with the Architect sub group. Conduct interviews with the clients and occupants of the building. Determine water use and conservation. )

### 8.0 Designation of Roles

	<b><u>Architectural</u></b>	<b><u>Civil Eng</u></b>	<b><u>Architectural Eng.</u></b>
Minute Taker:	Brad Ford	Alek Babel	Rotates
Agenda Maker	Brad Ford	Alek Babel	Matt Gibbs
Time Keeper	Brad Ford	Alek Babel	Matt Gibbs
Weekly Timesheet Collector/Summarizer	Rotates	Rotates	Matt Gibbs
Master Schedule Maker	Brad Ford	Alek Babel	Matt Gibbs