

I PRO 360 PROJECT PLAN

Sustainable Mixed Used Building

I PRO Faculty Advisors

Jeffrey Budiman
Mark Snyder
Steve Beck

I PRO Team Members

Jonathan Achs	Alejandro Aguilar	Chinedu Azodoh
Leon Chan	Melissa Cheviron	Yehuda Gutstein
Madison Kelly	Michael Kerrigan	Tyler Stellwag
Aubrey Vander Heyden	Michael Walters	Bryan Zacharias

TABLE OF CONTENTS

I.	Team Information	pg. 2
	Team Member Roster	pg. 2
	Team Strengths, Needs, and Expectations	pg. 3
	Team Purpose	pg. 7
	Team Objectives	pg. 7
II.	Background	pg. 8
	Customer/Sponsor	pg. 8
	User Problem	pg. 8
	Technology or Science Involved	pg. 8
	Historical Success or Failure	pg. 8
	Ethical Issues	pg. 9
	Business or Societal Costs	pg. 9
	Implementation Outline	pg. 9
III.	Team Value Statement	pg. 10
	Desired Behaviors	pg. 10
	Conflict Resolution	pg. 10
IV.	Work Breakdown Schedule	pg. 11
	Problem Solving	pg. 11
	Team Structure	pg. 12
	Gantt Chart	pg. 13
V.	Expected Results	pg. 14
	Expected Activities	pg. 14
	Expected Data	pg. 14
	Potential Products	pg. 14
	Potential Outputs	pg. 14
	Deliverables	pg. 14
	Challenges, Risks and Assumptions	pg. 15
VI.	Project Budget	pg. 15
VII.	Designation of Roles	pg. 15

I. TEAM INFORMATION

Team Member Roster

Name	Email	Telephone Number
Achs, Jonathan	jachs@iit.edu	
Aguilar, Alejandro	aaguila2@iit.edu	██████████
Azodoh, Chinedu	cazodoh@iit.edu	██████████
Beck, Steve	sbeck@codallc.net	██████████
Budiman, Jeffrey	budiman@iit.edu	██████████
Chan, Leon	lchan4@iit.edu	██████████
Chevron, Melissa	mcheviro@iit.edu	██████████
Gutstein, Yehuda	gutsyeh@iit.edu	██████████
Kelly, Madison	mkelly16@iit.edu	
Kerrigan, Michael	mkerriga@iit.edu	██████████
Snyder, Mark	snyder@iit.edu	
Stellwag, Tyler	tstellwa@iit.edu	
Vander Heyden, Aubrey	avander@iit.edu	██████████
Walters, Michael	mwalter2@iit.edu	██████████
Zacharias, Bryan	bzachari@iit.edu	██████████

I PRO 360: Sustainable Mixed Use Building

Team Strengths, Needs, and Expectations

Name	Strengths	Weaknesses	Knowledge/skills to develop	Expectations for the project
Achs, Jonathan	Architecture and problem solving, also decent at illustrative methods, ie photoshop, 3d modeling, etc.	Business related issues.	Working in a group/ well rounded knowledge of processes	Learn the workings of how an actual building process from start to finish happens, and not just focus on the architectural aspects
Aguilar, Alejandro	Diligent and resourceful worker. Proficient in a number of graphical programs and writing.	The most exemplary and efficient work I put forth is often done by myself, which can be hindrance to the idea of a group project.	Group efficiency; as opposed to self efficiency.	Develop a strong understanding of the Owner/Architect-Engineer relationship within the context of a real world setting and the limitations imposed by zoning and building codes.
Azodoh, Chinedu	Electrical And Computer Engineering background. Experienced in business plans and market research	No Architectural experience. No understanding of building codes	greater knowledge of architectural concepts.	learn what goes into developing and designing a building, particularly the electrical system of the building.
Chan, Leon	structural analysis and design, hard worker	building codes, business and marketing experience	business aspects of design and construction, communication within a team setting	develop a design for the client that is feasible and sustainable, develop a business plan based off of that design

I PRO 360: Sustainable Mixed Use Building

Chevion, Melissa	Architectural Engineering background, teamwork experience	Business, actual building design	Incorporating other people's knowledge and experience, utilizing strengths of all individuals	Learn how to actually design a building from scratch, as well as develop a business plan
Gutstein, Yehuda	architectural design, code analysis, leadership	business and marketing skills, cost analysis	business and marketing skills, how to develop and market a building, or any project for that matter	learn about business and marketing strategies and how to implement them in relation to a new building development. I Also would like to continue to improve on developing a working relationship with people/students of other professions.
Kelly, Madison	Organizational skills, graphic and oral presentations, graphics, research	I have no business experience or education	This Ipro will develop my skills and knowledge in the business areas	I expect us as a group to have a well thought out and developed business plan.
Kerrigan, Michael	Architectural Engineering Skills, eg. HVAC design, Building enclosure design, etc	Organization, Research, Business, Speling	Working as a team	Unsure

I PRO 360: Sustainable Mixed Use Building

<p>Stellwag, Tyler</p>	<p>Architectural Design Strategies, 3d computer generated models, Photoshop, Illustrator, and other presentation and layout abilities, Understanding of structural drawings, terms... and such</p>	<p>First time in a full development team.</p>	<p>Project Management, further structural understanding</p>	<p>understanding of full project development. start to finish.</p>
<p>Vander Heyden, Aubrey</p>	<p>Research, Planning and Design in Architectural Engineering. Proficient in MathCad, AutoCAD, and Revit</p>	<p>Lack experience in architectural space planning, business planning, and marketing</p>	<p>worked for an Architectural Engineering company for the past 3 years. Experience in MEP design, planning and problem solving. Look to develop my skills in sustainable planning and design.</p>	<p>Unsure</p>
<p>Walters, Michael</p>	<p>Previous experiance in a engineering environment doing research, Microsoft Office</p>	<p>working with non-engineering disciplines to complete a project</p>	<p>coordinating among many types of professions</p>	<p>to learn more about building design and planning</p>

I PRO 360: Sustainable Mixed Use Building

<p>Zacharias, Bryan</p>	<p>Architectural design, create visual presentations, public speaking, organization, leadership</p>	<p>Little knowledge of business plans or marketing</p>	<p>Learn about business plans and gain experience working with clients. Learn to work within an interdisciplinary process better.</p>	<p>To develop a scheme which is forward thinking in architecture, planning, and sustainability that meets the needs of the client, and is feasible in the real world.</p>
-----------------------------	---	--	---	---

Team Purpose

I PRO 360 was brought together to gain real world experience with developing a building from design to construction. This experience is not limited to design and engineering, but also involves the business aspect of development. The team will be in charge of market research, code analysis, programming, design, engineering, and creating a business plan.

Team Objectives

- Perform analysis of the various building codes to determine usable area and building type.
- Create a report for owner of the cost benefits using square foot estimates.
- Create a program for the option that the owner chooses.
- Draft a schematic design of the building.
- Perform engineering on the building to assure the safety of the building (ie. structural, acoustical, HVAC).
- Research and implement green technology into building design.
- Complete cost estimates and energy reports of the building.
- Create a business plan using the designed building as a prototype.

II. BACKGROUND

Customer/Sponsor

The project for this IPRO is to design a low rise mixed use building that incorporates sustainability systems. These systems include but are not limited to solar, geothermal, and wind energy. The design of the building will be retail and/or commercial space on the lower floors and residential space on the upper floors.

There is a client with a plot of land in Oak Park on Madison Street looking for a mixed use building. He is looking to move his business and home into this new space. The design of this structure will be used as the prototype for our business plan.

User Problem

The client has put a premium on consolidating his business and residence into one building. However, he is looking for the building design that has the “most bang for the buck”. Research has to be done on the cost benefits of the different schemes. This requires market research, parametric estimates, and census data.

A large part of the design will be trying to reduce the amount of energy and resources consumed in construction and in the daily use of the building. This entails research on the multiple types of green energy and creative thinking in the implementation of these technologies.

Technology or Science Involved

Sustainable technology will be researched and implemented into the building to provide energy and cost savings to the owner. Passive and active systems will be looked into. Some of the technologies used will be solar orientation, cross ventilation, and geothermal heat pumps.

Energy simulation tools such as eQuest and Energy Plus will be used. These tools will help manage and determine the savings acquired from using sustainable systems.

Historical Success or Failure

Mixed use developments were the norm before the onset of modern zoning practices. These zoning laws separated houses from commercial, industrial, and school buildings. Industrialization and skyscrapers also added to the problem and further segregated residences from businesses. From the 1910s to 1950s, mixed use buildings were hardly constructed.

In the 1960s and 1970s, there was a boom for mixed use. It was used as an aid for urban revitalization. This continued into the 1980s but in a smaller scale. Mixed use was integrated as part of historical preservation. Today there are three approaches to mixed use: increase the

I PRO 360: Sustainable Mixed Use Building

concentration of the land use, increase the diversity of the land use, and to combine segregated uses.

Ethical Issues

The investigation of the different schemes should be non-biased. If the team favored one option over another, the data could be skewed so that the owner chooses that alternative. This should be avoided and all viable options should be presented equally.

The implementation of sustainable technologies will lessen the reliance on traditional/grid systems. This might hurt public companies such as ComEd or General Electric. However, this effect can be considered negligible since the proposed buildings will be small compared to the thousands in the grid.

This is a competition with the other half of the class. We are obtaining information on our own from the same sources, but it is up to us how much we choose to share with the other team.

Business or Societal Costs

There are millions of people that spend countless hours throughout the week commuting to and from work. In addition to spending all that time, they have to pay for gas, bus fares, car maintenance, etc. Having a business and home under the same roof would eliminate those issues.

The application of sustainable systems will reduce energy consumption and the costs associated with it. Although the owner would have to pay additional costs to implement the technologies, it will compensate for itself over time. It will also create a better work environment and increase productivity.

Implementation Outline

The cost benefit breakdown of the different schemes will be presented to the client. The client will then choose an option. Designs and cost estimates will be prepared and presented to the client. He will then choose whether or not to develop the building.

A business plan will be created using the client's building as a prototype. This business plan will address market need, benefits versus costs of this approach, and comparisons to other building types in the area. The plan will be used to attract future clients.

III. TEAM VALUES STATEMENT

Desired Behaviors

- Give 100% effort
- Think Innovation
- A willingness to ask for help
- Work as a team
- Be Punctual
- Clear Communication
- Respect for one another
- Do the work that has been promised

Conflict Resolution

- Follow the chain of command: 1st try to resolve the problem within the subgroup, 2nd if needed ask other IPRO group members for advice, 3rd if not able to get anything resolved contact IPRO instructors.
- No-shows/ incomplete tasks need to be recorded and addresses personally, if not improved then reported to the instructor, in order to avoid any delays in the project.
- Resolve problems with time conflicts within individual subgroups on personal basis.
- Report time conflicts with weekly meeting to the instructor with a one week notice.

IV. WORK BREAKDOWN STRUCTURE

Problem Solving

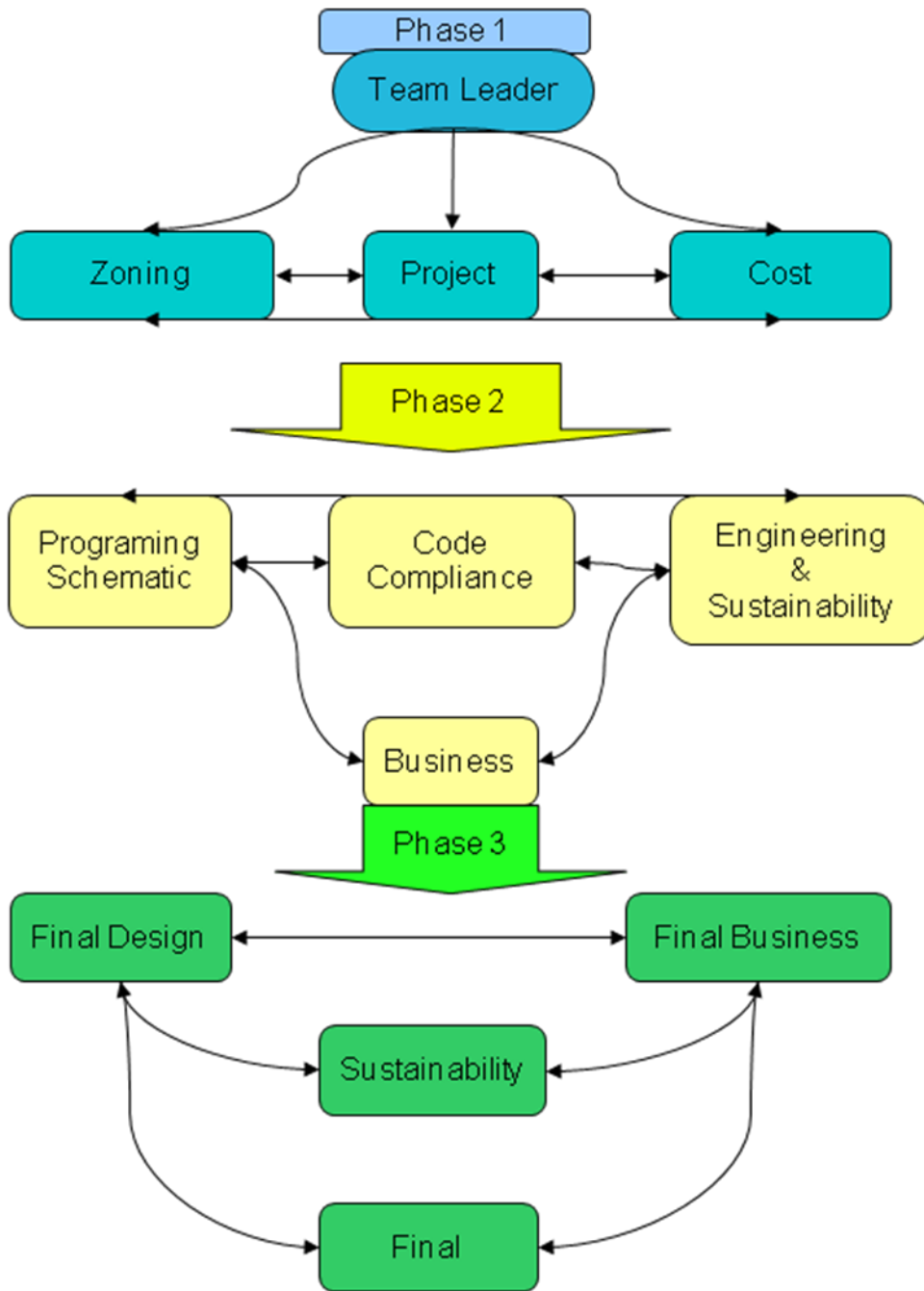
Our main responsibility is to develop a plot of land in Oak Park in a way that provides the most profit and meets the specific needs of the owner. The owner is a middle aged man with a large family who owns a computer company. The land is a vacant south facing lot. Adjacent to the east side of the lot is a Comcast building and on the west side is a defunct fireplace store. Many of the lots in the area are vacant and buildings are empty. The owner wants to develop this land and is very open to what ever will make him money. He really wants to build a building that can be a home for his business. He is also interested in haveing retail space he can rent out to a coffee shop and expressed interest in having a loft style residence where he can bring his family.

The first step to solving the problem is to thoroughly research the zoning laws and the zones respective codes and find all the restrictions. The zoning codes are found in the Madison Street Plan and Oak Park code. The zoning for the site will be thoroughly researched. From the codes and market research we will decide what is the best type of building to be built, whether it be commercial, commercial and residential, or commercial residential and retail, and also how big the building can be. This research will be conducted by the Zoning/Code Analysis sub team.

The Next major task is programing and continually fine tuning the business plan. Programing involves determining the specific needs that the owner has for the building and finding the relationships of the different spaces to one another. Once the Programing is completed we will come up with a couple of different schematic designs. Through out this whole process we will be attempting to incorporate sustainable design that is beneficial to the owner, oak park, and the environment.

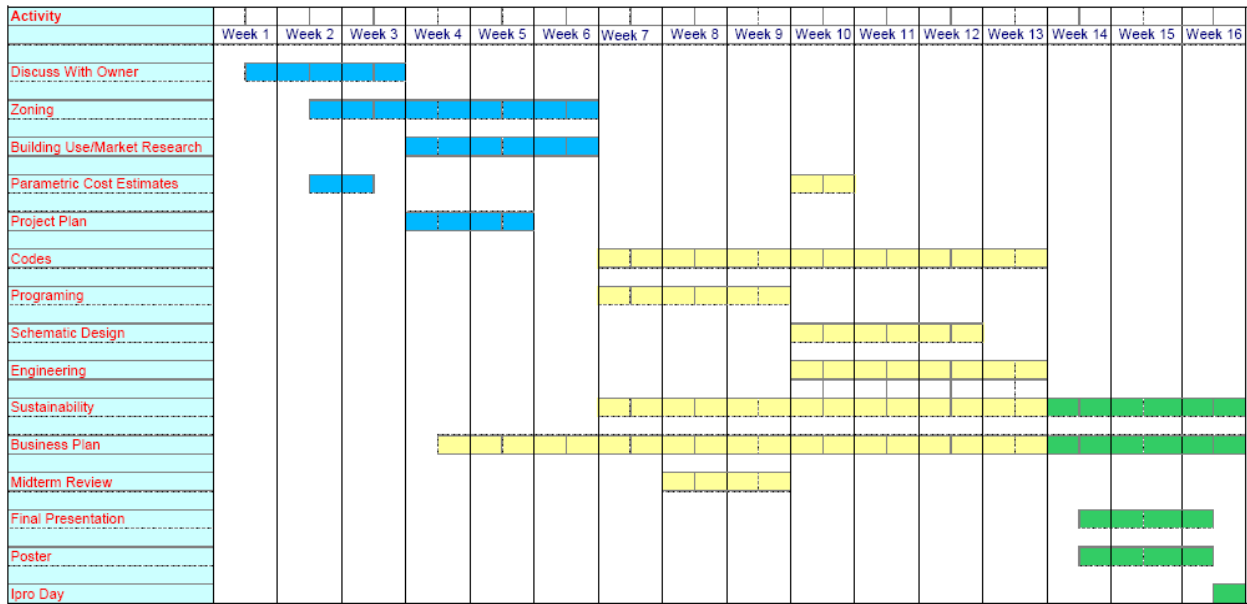
The biggest problem we are dealing with right now involves parking. According to code we need A certain amount of parking for each employee. The lot needs to have 25% green space and parking spots for 25% of the employees. It is not a large lot. As the company has about 18 people working there is a lot of parking and not a lot of space. We are trying to figure out how to make the building as large as possible the potential solutions will be tested, analyzed and documented.

Team Structure



I PRO 360: Sustainable Mixed Use Building

Gantt Chart



V. EXPECTED RESULTS

Expected Activities

- Research building codes to see limitations in building design.
- Acquire square footage of building and compute rough costs.
- Develop a program for the different parts of the building.
- Create a schematic design to be presented to the owner.
- Perform engineering on the structure including acoustics, HVAC, and structural systems.
- Research and implement sustainability systems into the building.
- Create a business plan to sell the designed building.

Expected Data

We expect to get the costs and payback period for the different options of the building from our research.

Potential Products

From our research, we will create a report to present to the owner. This report will include the cost benefits of each the options. This will help us and the owner decide on a scheme of the building to be designed and engineered.

Potential Outputs

- Setbacks, green space, and the parking spaces required will be gathered from code analysis. This will help us come up with an allowable building space.
- The rough costs will tell us which option is the most economic and aid in the selection of the scheme to be designed.
- Programming is the first step in coming up with the schematic design. This will help in determining the size of the rooms and how they are located with respect to each other.
- A schematic design will layout the entire building.
- Engineering will make sure the building is safe and comfortable. It might alter the schematic design.

Deliverables

Our deliverables will be the completed design of the mixed used building, construction and soft costs, and a business plan.

Challenges, Risks and Assumptions

There are many obstacles and challenges that can affect our results. One of them is the limitation set by the code. Parking spaces and other space requirements might make it impossible to explore certain schemes of the building. Another challenge is the size of our group. Since we have a large team split into several sub teams, communication between all the members might be difficult. Finally, the quality of the building might be substituted in favor of costs.

VI. PROJECT BUDGET

Item	Cost	Description
Field Trips	\$50	Trips to the site, precast concrete plants, etc.
Printing	\$100	Printing of various building codes and drafts of design
Models	\$150	Materials (wood, glue, etc.) needed to build a model of the proposed design
TOTAL	\$300	

VII. DESIGNATION OF ROLES

Agenda Maker: Bryan Zacharias

Time Keeper: Madison Kelly

Master schedule maker: Leon Chan & Joseph Kerrigan

iGroups: Yehuda Gutstein