

IPRO 317

Nana

***A Sustainable Restaurant
Development***



I. Team Purpose and Objectives

The team roster as well as the skills and expectations of each member, can be found in appendices A and B respectively.

Team Purpose

As an effective team, IPRO 317 is working to provide Nana Organic restaurant with unique and innovative opportunities relating to lessening their environmental impact and reaching a broader portion of their community, both for business and environmental education. Together we will gain experience both working as a diverse team and working with our clientele.

Team Objectives

The overall team objectives are to help Nana's become a more sustainable, energy-efficient and environmentally friendly restaurant. Through the business aspect, we will raise awareness of the restaurant in the surrounding community through advertisement and focus groups within the IIT community. Environmentally, we will help Nana's reduce their waste and energy consumption by finding ways to reuse waste by recycling, composting, and other "home solutions". Finally, we will work on improving the building systems and structure, improving the insulation to reduce heating and cooling costs, develop reinforcement for the existing roof structure, and provide cost estimates for necessary work.

II. Background

The Client: Nana Organic Restaurant

Nana is a family-owned, organic restaurant located in Bridgeport, Chicago. Only a few minutes' walk from the IIT campus, Nana menu appeals to a wide range of customers, from vegan to meat-lover. Being certain to offer only the finest organic ingredients, Nana's owners and workers focus on providing a positive example in Bridgeport that emphasizes organic solutions. All ingredients used in Nana's dishes comply with the USDA National Organic Program standards. Not only do Nana's owners focus on maintaining an organic menu, they also are continually seeking new ways to engage in and improve the sustainability of their restaurant while limiting their environmental impact.

User Problems

Having been in operation for only five months, Nana organic is experiencing the struggles which correlate to many small businesses. Nana's owners have recognized that, despite studying and researching other small businesses, unexpected struggles will always occur at the start of a business due to lack of experience. As such, they are in the process of preparing for the worst to ensure that all aspects of the business operation are well-protected.

Some of the problems we will work to address are determining the effectiveness of dinner expansion, helping Nana reach an extremely diverse demographic and effectively distributing the unique organic theme around the cultured Bridgeport area. Also, as the owners of Nana seek to embrace more environmentally-friendly approaches to all aspects of their restaurant, we will work to provide the most beneficial and cost-effective solutions. To do so, we will need to determine the specific building codes and permits that are required for roof gardens, composting and conversion of vegetable oil into bio fuel.

Technology and Science

Compost is food for plants. It is the natural process in which bacteria and other decomposers break down organic matter into a form which can be absorbed by plants. Nana's hopes to be able to create a compost pile in order to take their food waste and make it useable again instead of just throwing it away.

Many cleansers today are full of harsh chemicals that can damage the environment. Those chemicals can get carried into the air through evaporation or into groundwater as it is flushed down the drain. Nana's has expressed an interest in finding environmentally friendly cleaners that use less harsh chemicals in order to clean their dishes and wash their seating area.

Hydroponic gardening is one of the options we are considering for a roof garden at Nana's. Hydroponics uses a mineral and nutrient rich mixture added to water to supplement the use of soil in order to grow plants. This can help to cut down on pests and weeds and makes produce easier to clean and manage.

The world today is very dependant upon electronics and appliances to survive. The cost of this dependence is a substantially large requirement of electricity. Electricity is created through the burning of coal or nuclear power plants, which may damage the environment by raising CO₂ levels and adding to global warming. In order to reduce their carbon footprint, Nana's has shown interest in investing in energy efficient appliances such as a convection oven and electric burners. Decreasing energy consumption not only helps the environment, it also helps to decrease the electric bill.

Historical Success

To judge the potential success of Nana's goals, we can look at various restaurants with similar philosophies. Frontera Grill is a restaurant located on the north side of Chicago that serves similar food to that which Nana offers. In particular, the focus on seasonality and local farm food products are what these two restaurants have in common. Based on the success of Frontera Grill, which opened in 1987, one could assume that Nana's success could continue in a similar fashion.

The owners at Nana have expressed an interest in building a garden upon their roof, or at least maintaining a garden for herbs or other small plants which they could utilize. Several Chicago restaurants, including Frontera Grill, have already worked toward growing their own produce to be used within their daily recipes. Judging by the success of these other restaurants, delving into the realm of home-grown produce may prove to be a feasible option for Nana.

In Milwaukee, Wisconsin, the Tocadero Café and Bar uses a trellis system for shading and cooling in their outdoor garden terrace. The trellises are naturally overgrown with vines and roofed with plexiglass sheeting to resist weather conditions. If Nana expands their seating to an outdoor space, these shading and cooling systems will be applicable.

Furthermore, previous IPROs have already had plentiful research and progress relating to several of our initial concepts, including converting vegetable oil into bio-fuel and the concept of composting. We intend to utilize their research and extrapolate it with ours, as well as work directly with Nana and the city of Chicago to develop beneficial processes that comply with city regulations. There are many studies on eco-friendly cleaners and we will work with Nana to help find and utilize the "greenest" chemicals for their organic business plan.

Ethical Issues

The owners of Nana's restaurant want to advertise themselves as a green-conscious business, as all of their food products are in fact local and organic. It is also our responsibility to implement solutions and technologies that are environmentally conscious. This will legitimize their desire for and claim towards being a truly green and organic business.

In an effort to reduce waste, Nana is looking to conduct onsite composting. Since the restaurant is a public facility, issues concerning others not associated with the restaurant must be taken into account. This ethical issue is defined by a restaurant's legal right to compost on their own property, with the provision that there are no immediate health concerns or code violations.

Given the fact that some green solutions exist in other restaurants that we will be visiting, we need to be careful not to divulge their trade secrets to our client without voluntary consent by the other business owners.

Business Costs

Environmentally conscious design has been incorporated into much of today's new construction. In fact, through the past few years, it has almost become an industry standard. As a team, we are presented with a unique opportunity to work on building which is over one hundred years old and that has been renovated and repurposed for residential and commercial use. The building's owners have taken their first step in becoming a green, sustainable business by repurposing a structurally sound, historical building. As such, the societal costs of creating this new business have been low.

There are currently certain issues regarding the building and its site that can be improved upon. One issue relates to the full height windows on the commercial portion of the building, in that the majority face southwest and are responsible for much of the building's heat gain throughout the year. As a business which markets itself as organic and is seeking to label itself as green, it is important to work towards conserving energy for the building in which it is housed. The changes proposed by our team will ensure that the building and business have a well-rounded 'green' strategy.

Proposed Implementation

There are several practical solutions for improving the energy conservation strategy of Nana's restaurant. To decrease the heat gain from the restaurant's southwest facing windows, a shading system can be implemented into the restaurant's façade. A double façade system can also be applied to decrease the heat loss through the uninsulated masonry walls of the restaurant. The owners of the restaurant have also proposed reusing their cooking oil as biodiesel for their company car.

For the green roof concept, detailed drawings and renderings will be provided addressing these issues with the highest efficiency, least cost, and in the most eco-friendly manner.

For composting, bio-fuel, cleansers and the reuse of cardboard waste, a business plan will be proposed which will include any and all options, their projected costs as well as any other details pertaining to the production of bio-fuel from vegetable oil, use of cardboard waste and composting as well as the selection of cleansers.

III. Team Values Statement

Desired Behavior

Communication - Effective communication skills are crucial for a team's success. These include expressive skills as well as listening skills. All team members are encouraged to engage in group discussions and share opinions while respecting other individual's ideas.

Commitment - All team members are expected to take responsibility for completing the assigned tasks on time as well as attending meetings regularly. The commitment that is developed due to these responsibilities is a critical factor in the team's success.

Contribution - Team members are encouraged to openly participate in team meetings. They should also take responsibility in helping the team reach its goals. All team members are required to actively participate in accomplishing the set goals.

Competence - All tasks should be completed with both interest and excellence.

Conflict Resolution

In the case that problems arise in the duration of this project, concerns will be handled at the subgroup levels. The subgroup leader will determine whether the problem should be addressed as a group or as a singular discussion with the subgroup leader. If the problem is of a major concern and affects the direction of the project itself, it should be resolved with the entire team in a professional manner. Both sides of the problem should be discussed before arriving to a conclusion. All team members will have an opportunity to discuss the problem along with voting for the final decision. Should special circumstances arise for any individual, such as a personal emergency, the team leader(s) must be made aware of the situation in a timely manner so that accommodations may be created to prevent any potential setbacks.

IV. Team Structure

Team Name: Nana Organic



Motto: Using green methodology to promote energy efficiency, productivity, and public awareness.

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Work Breakdown Structure

The Gantt Chart can be found in Appendix B.

▪ Research

- For the environmental subgroup for IPRO 317 the four members of the team will be focusing on four main areas led by Jordan Margolis.
 - Garden/Greenhouse-group
 - Homemade solutions-group
 - Biodiesel/cardboard-James Mellom, Jordan Margolis
 - Cleaners/composting-Jessica Roth, Sasha Bajzek
- During the first few weeks of the semester we will be communicating with Nana to get a better understanding of the business and its current operating status.
- From our observations and discussions with Nana we will begin to define our particular subgroups goals by developing efficient ways to help Nana with its current status and how it pertains to our four main areas of focus.
- IPRO 317 recognizes the difficulties in achieving our goals, and that they may not be completed by the end of the semester, however we will have put all of our best efforts forward in the attempt to achieve our goals.

ENVIRONMENTAL Sub-Group

Topic	Group members
Collective group work (garden/greenhouse)	
Collective group work (homemade solutions)	
Group1 (cleaners/composting)	Jessica Roth, Sasha Bajzek
Group 2 (biodiesel/cardboard)	James Mellom, Jordan Margolis

ENVIRONMENTAL SUB-GROUP WORK STRUCTURE

SUB-GROUP LEADER

JORDAN

SUB-GROUP MEMBER

JORDAN MARGOLIS
JAMES MELLOM
SASHA BAJZEK
JESSICA ROTH



GARDEN/GREENHOUSE

-REUSE OF CARDBOARD WASTE
-VEGETABLE OIL INTO BIOFUEL /GLYCERINE

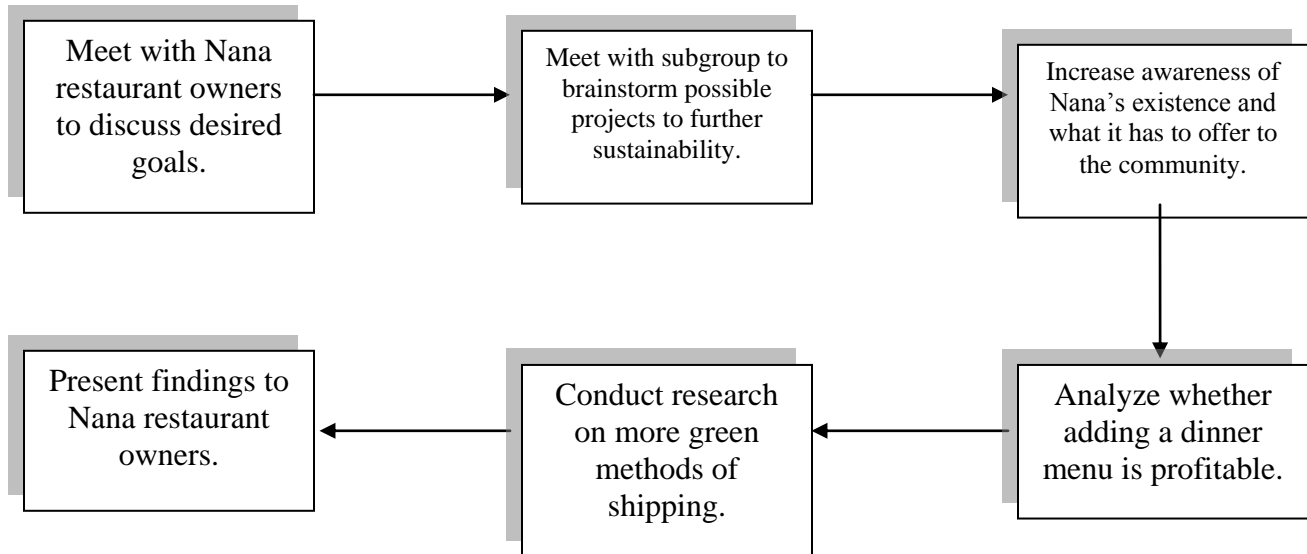
JAMES
JORDAN

HOMEMADE SOLUTIONS FOR ENERGY EFFICIENCY

-SMALL-SCALE COMPOSTING
-ECO-FRIENDLY CLEANSERS

SASHA
JESSICA

BUSINESS Sub-Group



Community outreach

- Spread word to locals about Nana (1 mile radius)
 - IIT student coupons on Mondays or Tuesdays
 - Senior citizens
- Educational seminars

Dinner hours

- Experimental phase on Nana's terms
- Help determine the pros and cons of this endeavor

Extra space (in collaboration with building subgroup)

- Determine the pros and cons of this space as:
 - A grocery market
 - Rented space to tenants
 - More dining space

Website

- Help make improvements to the Nana website

Outdoor tables

- Cost of new tables and permit
- Determine whether or not having outdoor tables increases business

Topic	Group members
Business Sub-Group Activities As a Whole	Kenneth Boubel, Matthew Kavicky, Bushra Hussaini, Seth Ellsworth

BUSINESS SUB-GROUP WORK STRUCTURE

SUB-GROUP LEADER

KENNETH

SUB-GROUP MEMBER

KENNETH BOUBEL
MATTHEW KAVICKY
BUSHRA HUSSAINI
SETH ELLSWORTH



BUSINESS SUB-GROUP ACTIVITIES AS A WHOLE

-MARKETTING, ADVERTISING &
SOCIAL NETWORKING
-GREEN GRANTS, FUNDING &
POSSIBLE REBATES
-DINNER EXPANSION
-ENGAGING COMMUNITY

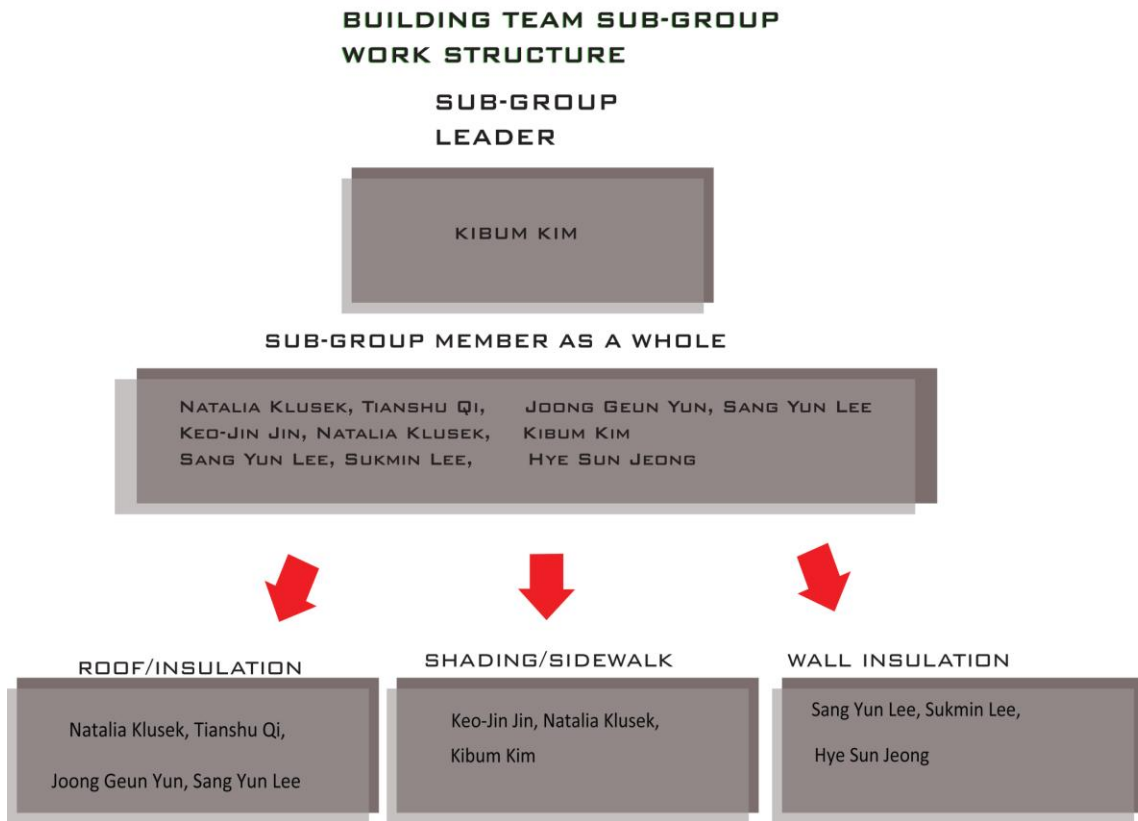
BUILDING Sub-Group

How the Building group will complete the project

The building group will be focusing on research and develop designs and schematics for different green building methods to improve the existing restaurant Nana. The building group is also divided into three smaller groups: Roof/Structure, Sidewalk/Shading and Wall/Insulation in which each will be improving the building's design as a green project. The Roof/Structure group will be designing a green program on the restaurant's roof space and will also figure out the structure reinforcement to support the additional program. The Sidewalk/Shading group will design different schemes for an outdoor dining space on the south sidewalk which will be used during the summer. Additionally a shading device using green technology will be designed along with the sidewalk. The Wall/Insulation group will focus on enlarging the energy efficiency of the building by improving or redesigning the insulation of the old brick wall. The project will require great concentration on team work and communication, particularly between the architect and engineer students in order to achieve the required result. It is reasonable to believe that all of these major tasks and requirements will be met in the allotted time frame.

Team Structure

Topic	Group members
Roof/Structure	Natalia Klusek, Tianshu Qi, Joong Geun Yun, Sang Yun Lee
Sidewalk/Shading Wall/Insulation	Keo-Jin Jin, Natalia Klusek, Kibum Kim Sang Yun Lee, Sukmin Lee, Hye Sun Jeong



Expected Results

Business team

The major goal of the business team consists of advertising Nana to students at IIT and the local community by increasing awareness of organic foods and its benefits. Furthermore, the business subgroup will analyze the benefits of adding a dinner menu in addition to the existing breakfast and lunch menus. The biggest challenge is dealing with time constraints. From the business perspective, many of the potential changes that will be taking place involve some sort of experimental phase followed by an analysis of the success or failure of these experiments. For example, if Nana decides to incorporate dinner hours, they will first do so on weekends only. This limits the amount of data the group will have to work with in order to make decisions about the success or failure of the experimental phase. Another challenge is trying to determine what changes can be attributed to improvements in Nana's business flow. That is, if Nana's business improves, we need to determine a way to pinpoint what caused it do so. We cannot necessarily assume that these improvements are a result of the endeavors of the business group, as it could simply be that Nana is a new business and is due to grow. Therefore, within the group, we will need to make careful measurements of progress as a direct result of our efforts. As is with any business, there are always risk factors involved with new implementations. Starting up a new project comes with a cost, and it may turn out that the costs outweigh the benefits of a given implementation. Finally, by dividing the work into different subgroups, the amount of potential is substantially increased, but this also adds a risk of causing conflict when piecing all of the different parts back into a whole. Therefore, effective communication across the different subgroups is essential, as well as communication between members within the subgroups.

Environmental Team

The goal of the environmental portion of this project is to determine several different solutions relating to green design. Therefore, much research will be conducted on composting, environmentally-friendly cleansers, the creation of biodiesel and glycerin from cooking oil, and energy-efficient appliances. As all of our solutions relate to a restaurant, we will also be researching the various Chicago codes which may limit our options or opportunities for green solutions. We will also be researching the availability of cardboard recycling in the area, as well as the research and creation of a working prototype of the vertical garden. From our research, we intend to determine comparisons between cost and energy consumption for various kitchen appliances, as per the request of the restaurant owners. We also expect to either locate a local recycling company willing to haul cardboard boxes or create another long-term recycling solution for said cardboard boxes. Our research will also define allowable solutions, primarily for compost and cleaners, which adhere within Chicago restaurant and building codes. Through both research and prototyping, we intend to create a vertical garden as well as the process for creating usable biodiesel and soap from cooking oil. Currently, the primary challenges which have been ascertained are those relating to Chicago Codes. As the various codes are very restricting, it is going to be a challenge for this group to determine green

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solutions that adhere to the rules and regulations of Chicago, particularly relating to composting. Also, initial research has determined that current solutions for a vertical garden do not maintain adequate water throughout. Thus the challenge will be determining a new solution for the water supply.

Building Team

By the end of the semester, our building group hopes to have completed a feasible design improving the existing restaurant Nana. Through intense research, detailed design, and ideological thinking, it is our intention not only to improve the restaurant itself but also provide good standards and ideas for the organic food restaurant. The architecture students are expected to redesign the building to make it capable of utilizing natural resources while creating an elegant original appearance. The engineers are expected to work with the architects in order to properly incorporate design specifications, whether they are structural, energy-related, or environmentally permitted. It is expected that our presentation will demonstrate the effect that designing a green restaurant can have on energy saving, sustainability, and other environmental aspects. We hope to provide examples for future green restaurant projects.

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Budget

Activity		Cost	Description	
Focus Groups	Business	Coupon Production	\$50	Printing cost
		Advertising Cost	\$50	Printing cost for sample advertising options
		Focus Group	\$150	Cost for hosting Focus Group sessions
	Environment	Vertical Garden Prototype	\$100	Model production cost
	Building	Shading Mock-up model	\$100	Model production cost
		Appliance Sample study	\$50	Window Film Sample
Field Trip		\$250	Round Trip for the Green Roof Garden example Assume 10 miles trip x 4 cars @ 50cents/mile plus sample food	
Printing/ Supplies		\$50	Finishing cost for printing final IPRO deliverables	
TOTAL		\$700		

Designation of Roles

- Agenda Maker/ Minute Taker: Ken
- i-Groups Moderator: Qi

Appendix A

IPRO 317 Roster				
	Team Member	Major	E-mail	Phone Number
1	Ken Boubel	Mechanical Engineering	kboubel@iit.edu	██████████
2	Jordan Margolis	Architecture Engineering	jmargol1@iit.edu	██████████
3	Seth Ellsworth	Architecture Engineering	ellsset@iit.edu	██████████
4	James Mellom	Architecture Engineering	jmellom@iit.edu	██████████
5	Sasha Bajzek	Civil Engineering	sbajzek@iit.edu	██████████
6	Jessica Roth	Civil Engineering	jroth3@iit.edu	██████████
7	Natalia Klusek	Architecture Engineering	klusnat@iit.edu	██████████
8	Bushra Hussaini	Biochemistry Engineering	bhussai2@iit.edu	██████████
9	Kibum Kim	Architecture Engineering	kkim38@iit.edu	██████████
10	Keo-Jin Jin	Architecture Engineering	kjin@iit.edu	██████████
11	Sang Yun Lee	Architecture Engineering	sang1203@gmail.com	██████████
12	Sukmin Lee	Architecture Engineering	slee22@iit.edu	██████████
13	Joong Geun Yun	Architecture Engineering	jyun6@iit.edu	██████████
14	Hye Sun Jeong	Architecture Engineering	hjeong2@iit.edu	██████████
15	Tianshu Qi	Civil Engineering	tqi2@iit.edu	██████████
16	Matthew Kavicky	Applied Mathematics	mkavicky@iit.edu	██████████

Appendix B

Team Skills and Overall Expectations

Team Member	Individual Strengths	Knowledge/Skills to develop	Overall Expectations
Ken Boubel	Interpersonal Skills, Vision, Leadership Skills, good team member, organized, able to motivate, get objectives accomplished in an efficient timely manner, Business passion/intelligence, logical clear thought process, not afraid to take risks	Business Relations, Attain restaurant experience/knowledge, learn how to effectively lead a large team of varying diversity, Always improve speaking/presenting skills	Increase knowledge of organic food, Advertise effectively, get IIT community interested in Nana, Learn from others, accomplish the goals that we set out to achieve, Increase number of daily customers, Inform community at least within a one mile radius of Nana of its existence and what it has to offer as a unique restaurant
Seth Ellsworth	Previous IPRO experience, excellent communication and organization skills, architectural design, business and marketing knowledge.	Defining goals and working as a team member to achieve them, improve people skills, gain some management experience.	I expect to become part of an organized team to help Nana restaurant to become more sustainable, and to increase public awareness of the establishment and its environmental awareness and responsibility.
Bushra Hussaini	Experience in working in small business, organizational skills, works well in teams, motivated to complete tasks	Improve presenting skills, learn more about energy efficiency	Work together as a team to attain Nana's goals
Matthew Kavicky	Very adaptable, capable of fitting a variety of roles in a group, dedicated to getting things done, good at communication, well-organized, practical minded, good at helping people get things done	Basic understanding of how business is run, further enhancement of teamwork skills and communication, applying what I know from my education to more practical areas	I hope to learn more about small businesses through direct collaboration with a restaurant owner. Also, I hope to learn from other students within the group more about energy efficient green methodologies of which I know little about currently. I hope to offer as much as I can to Nana to help them achieve their goals.

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Kibum Kim	Previous IPRO experience (green building), architectural design knowledge and work experience. AutoCAD, 3DMAX, Photoshop skills	Improve speaking/presenting skills; improve working as a team member, communication between different teams.	Increase knowledge of a green building, learn to lead a small group and communication between different groups, accomplish the goals with both the team members and Nana.
Tianshu Qi	Experienced in structural design and construction cost estimation. Skilled in AutoCAD, SAP, and MathCAD Calculations.	Apply the knowledge to real structures. Improve communication skill.	Get more knowledge in energy efficiency for a green building; also learn to apply my knowledge to enhance the safety of an existing building.
JoongGeun Yun	Knowledge based on major courses, estimating cost and figuring out how safe the building is.	Improve cooperation with team members, presenting skills.	In terms of safety of building, apply all the knowledge to real building so make building more sustainable and safe.
Natalia Klusek	Previous IPRO experience (Growing Water), architectural design/work experience. Knowledge of AutoCAD, LISP, 3DMAX, Rhino, Illustrator, Photoshop, (some) Flash	Improve team building skills; learn more about developing and running a successful business; working with a real life client	To work closely with a real life client; provide presentation/drawings in a managed timeline and professional manner; come up with useful and innovative solutions for the 'green business' problem
Hyesun Jeong	Design knowledge and work experience	Improve team-work skill, public presentation skill	Bring the idea of green into making the organic restaurant through architectural and business strategy
Keo-jin Jin	Design knowledge and work experience	Apply the knowledge to real structures. Cooperation with client and Project development skill	attain understandings for sustainable solutions that can be applied to the commercial business
SangYun Lee	Architecture design with Structural design , and computer program knowledge (Photoshop , Illustrator , Autocad, Rhino, Grass hopper, 3D Max , Etabs , Paraclouiding)	Improve communication/presenting skills, as a team member.	Thinking about what is green technology and how to make connection between Real market for organic restaurant and discipline learning by school as architect.

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Sukmin Lee	Creative ideas to solve problems, Architectural engineering knowledge, Good supporter for teamwork	Teamwork skill, Electrical and mechanical aspects in building, Analyzing energy consumption in restaurant	I expect helpful final suggestions for Nana restaurant's sustainability which come from synergy effects of teamwork.
Jessica Roth	Strong communication and organization skills, strong research methods, general engineering knowledge	Gain experience working with a client, Gain knowledge relating to current options for alternative energy, general green design and organic solutions	I expect to work in a group setting to benefit Nana restaurant. I expect to conduct research and determine several possible solutions relating to energy efficiency, waste reduction, methods of recycling, and general organic solutions to the various problems with which we have been presented.
Sasha Bajzek	Strong communication and organization skills, strong research methods, civil engineering knowledge, gardening experience, knowledge relating to organic solutions	Implementing classroom knowledge in real-world applications, Gain knowledge relating to current options for alternative energy and general green design	I expect to work as a group to help Nana restaurant be more energy-efficient and environmentally friendly. I expect to conduct research and determine multiple solutions relating to waste reduction, methods of recycling, and general organic solutions to the various problems that arise.
James Mellom	Previous IPRO experience, Involved in other successful group projects, Architectural design, Construction Management.	To attain a better understanding for organic foods, and to gain experience creating/maintaining a sustainable organic food business.	As a well functioning team, achieve the goals we set for ourselves.
Jordan Margolis	Project management skills, previous IPRO experience, Architecture, Landscape, CAD, Graphics, Promotions/Marketing, knowledge of plants	To gain a better knowledge of the organic industry, and how a business reacts with the "green movement." To better my skills in project / group management	To increase the public knowledge on organic foods / sustainable design. To set and work beyond given goals for group as a whole as well as sub-groups

