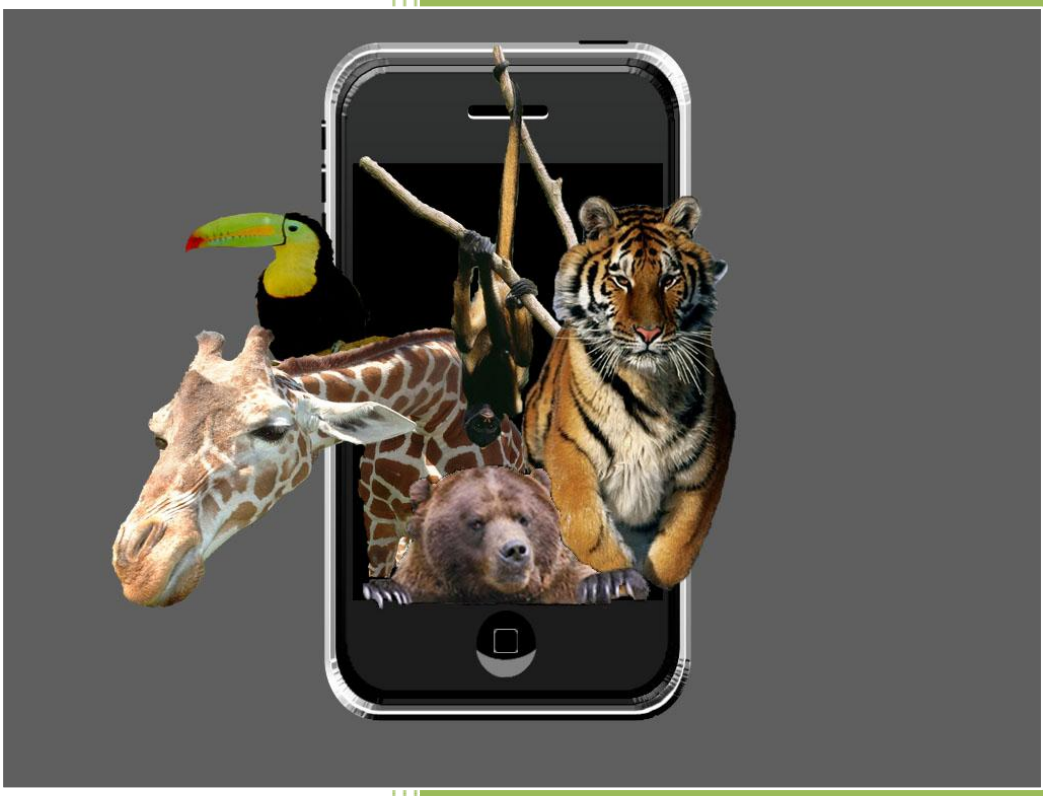
ILLINOIS INSTITUTE OF TECHNOLOGY

BROOKFIELD ZOO
Chicago Zoological Society
Inspiring Conservation Leadership

2010

IPRO 318 (ZOO TECH): Project Plan



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Michael Mithun
Amanda Potacki
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Sponsor: Brookfield Zoo

Faculty Advisors: Cindy and Dennis Hood

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Abstract

The members of IPRO 318 are collaborating with the Brookfield Zoo to develop an iPhone application that will enhance the visitors' experience and interactions with the zoo environment. This application will be an educational device in addition to trip planning tool. As such, it will be broken down into two major components. First, an educational module that includes the guided inquiry system for animal identification with other informative and interesting functions (such as games, social networks, etc.). Second, the commodity module, which includes an interactive map with GPS, basic park information (such as hours, tickets, parking, etc.), and functions related to other services provided by the zoo. Additionally, it involves designing a sleek, logical, user-friendly layout. By organizing the animal database and additional information provided by the zoo, and coupling this with the tools available on the iPhone, IPRO 318 seeks to design an efficient and entertaining means of utilizing modern technology to explore the zoo and its animals.

This document provides a detailed overview of the project, including the plan of action, work breakdown, project goals, background information, and the organization of the IPRO team.

I. Purpose and Objectives

Team Purpose

The Brookfield Zoo is in need of a device that will enhance the overall visitor experience by aiding in trip planning and educating visitors about the animals, ecosystems, and conservation efforts. This IPRO strives to aid zoo visitors through the development of a mobile device application/function, namely an iPhone application. Ultimately, the purpose of this IPRO is to create an application that will allow users to become more involved with the services the zoo has to offer and develop a relationship with the animals.

Objectives

The primary objective of this team is to build upon the previous semester's prototype of a Brookfield Zoo iPhone application. The application will include an interactive map, which will allow the user to locate their current position, as well as specific animals throughout the zoo. Additionally, the guided inquiry portion of the application will aid in the identification, education, and awareness of each animal.

The team has set the following goals:

A. **Usability:** To design a more aesthetically pleasing, efficient application interface.

B. **Identification of Animals:** To fine-tune the guided inquiry process by clarifying previous questions.

C. **Beyond Identification:** To determine functions of the application that will enhance the zoo experience in addition to identifying animals.

D. **Coding:** To implement a map feature capable of tracking the user (GPS) and transfer to a database driven system.

II. Background

A. Sponsor Information

IPRO 318 is collaborating with Brookfield Zoo and the Chicago Zoological Society (CZS) in order to develop the iPhone application. This project initiated last semester and developed from the zoo's interest in enhancing visitor experience using technology. Brookfield Zoo hopes to use the iPhone application as an education tool in order to fulfill the Chicago Zoological Society's Brookfield Zoo mission statement: to inspire conservation leadership day to day by connecting wildlife and nature with people based on the premise that our future and the future of animals are intertwined.

Brookfield Zoo is located in Brookfield, IL, a suburb of Chicago since 1934. It has a reputation for taking a leading role in animal care and conservation. In addition to conservation, the zoo places great importance on the inspiration and education of children, students, teachers, and the general public. More information can be found on the following website: http://brookfieldzoo.org/czs/About-CZS.aspx, which further describes this IPRO's mission and inspiration for this summer, as well as what initiatives have already been implemented.

B. Precedents

This is the second semester of IPRO 318. The project originally started in summer 2009, as a collaboration between Brookfield Zoo and Professor Hood, who then offered a course to expand and propose ideas for an iPhone application to enhance the guest's experience at Brookfield Zoo. The course concluded with two main ideas for the application, a GPS enabled database and a guided game. The previous semester's team built on these ideas and developed a guided inquiry pathway to distinguish animals within the exhibit "The Fragile Kingdom" as well as created a map of the zoo to scale.

Outside of the Illinois Institute of Technology (IIT), other zoo iPhone applications have been developed and are available for use, namely the Houston Zoo App, Memphis Zoo App, Woodland Park Zoo App, Dallas Zoo App, Cincinnati Zoo App, and most recently the Detroit Zoo App. The following is a general outline of the functions and features of the applications:

1. **GPS enabled map**- displays guest locations and a "Friend Finder" feature allows users to connect with their friends while at the Zoo
2. **Near Me button**- lists all of the zoo's exhibits, concession stands, restrooms, etc, in the relation to where the IPhone user currently is
3. **Today button**- presents an updated list of "Meet the Keeper talks," activities, as well as presentations around the zoo, with the personal function of creating one's own schedule
4. **Twitter Stream-** streams live tweets about the zoo
5. **Animals button-** each animal is listed with the following provided information: names, facts, photos, and videos
6. **More button-** informs visitors about possible renovations at the zoo, parking information, upcoming events, updated photos/videos, as well as other rides/attractions

Each of these precedents were developed by AVAI. AVAI is a technology solutions provider that provides mobile application strategy, design, and delivers content to mobile phones with native applications and mobile optimized websites. For more information one can visit: http://avaimobile.com.

In addition, there are two additional cross parallels, which can be incorporated into the application. The first is an iBird App, which is a bird classification application with a very high level of user interaction (http://ibird.com). Secondly, the Shazam application uses sound recognition to identify

the song the user is listening to (www.shazam.com). Incorporating these ideas may help make the application much more interesting than any other zoo application.

C. Ethical and Social Considerations

Privacy is the most underlying ethical issue of this project. Firstly, the privacy of animals and other content disclosed by Brookfield Zoo/ CZS needs to be considered. Secondly, the privacy of those who take part in surveys for the IPRO needs to be considered. These privacy issues include, but are not limited to visitors sharing their experiences at the Brookfield Zoo via the internet. Thus, to avoid users sharing photos, videos, or other information protected by Brookfield Zoo without consent, a privacy contract should be implemented in the application, which users must agree to in order to use the application. Additionally, surveys need to be evaluated so that they comply with the MRA Code of Marketing Research Standards.

This application should provide a benefit to society, since it is an educational tool about world conservation. Therefore, society should become more aware of their environment and in turn become responsible citizens with an effort to create a more sustainable society. This relates to the mission statement of the CZS, whose purpose is to provide conservation for animals, since the future of animals and humans are intertwined. To implement this, our application needs to evoke public awareness about animals; how to protect their habitats (and in turn protect the ecosystem), the overall increase or decrease in a population over time, breeding success rates, known threats, and other conservation efforts.

D. Business or Societal Costs

While the iPhone application would cost a small fee, the profits would go back to Brookfield Zoo, helping pay for the costs of housekeeping, food, and training for the animals. On the other hand, the foremost societal cost may be the application's impact on the zoo's job market. There is the possibility that the application may reduce the need of zoo of staff and volunteers, especially positions that deal with visitor relations, such as information desks and zoo guides. However, the probability of technology replacing humans in this situation is relatively low, since it is known that a visitor's experience is more enjoyable and highly rated when they come in contact with a working personal. Moreover, the application may also aid zoo staff and volunteers with their jobs.

III. Statement of Values

The team members of IPRO 318 acknowledge and agree to adhere to the following principles of professional and ethical conduct:

Teamwork:

- To work as a team in order to complete the assigned tasks in a timely and earnest manner and solve any problems encountered as a group to meet a common goal.
- To be present, attentive, and open-minded during group meetings to achieve maximal participation and comprehension.
- To resolve any grievances among group members quickly and peacefully, thereby maintaining focus on their primary objective.

Communication:

- To use the different means of communication such as iGroups, email, and verbal communication to seek help and/or clarification when needed.
- To have clear and effective communication in a timely manner when sharing information with the group.
- To keep contact with other group members while visiting the zoo to ensure the tasks are being completed without any issues.

Productivity:

- To remain informed of all topics and important issues addressed by the group.
- To focus on the different tasks assigned when visiting the zoo and remain productive.

Professionalism:

- To treat each other with courtesy and respect as dictated by professional standards.
- To provide/accept constructive criticism to/from other group members politely.
- To follow and respect the zoo rules and procedures as established in their policy when working on site.
- To show up on time for meetings at the zoo or to notify with plenty of time of any circumstance that would prevent you from attending.

Conflict Resolution

Conflicts are unavoidable and thus resolutions should always be part of a work plan. The team members of IPRO 318 have established steps to solve any conflicts amongst the group. When a problem occurs, it should be addressed to the team for analysis in order to determine the root cause of the problem as well as determine what is affected by the problem. The team members should engage in a logical discussion to discuss possible solutions and establish a plan of action to solve the issue. When faced with a recurring problem, the team must view the problem from different viewpoints and seek additional help when necessary. Furthermore, arguments between the team members are counterproductive and can compromise the respect shared between group members, as well as decrease productivity and finally compromise the achievement of objectives. In order to effectively and peacefully resolve conflicts within the group, the members of IPRO 318 will:

- Address the problem to the person involved and create awareness of the situation within the group
- Discuss options in a courteous, professional manner to maintain good relations within the group
- Find a solution that best serves the interests of the group as a whole, and does not interfere with the goals and timelines established by the group.

IV. Methodology

A. Work Breakdown

The team divided into four subgroups to accomplish the set goal. Furthermore, the team will work as a whole to develop the application prototype as well as complete IPRO deliverables.

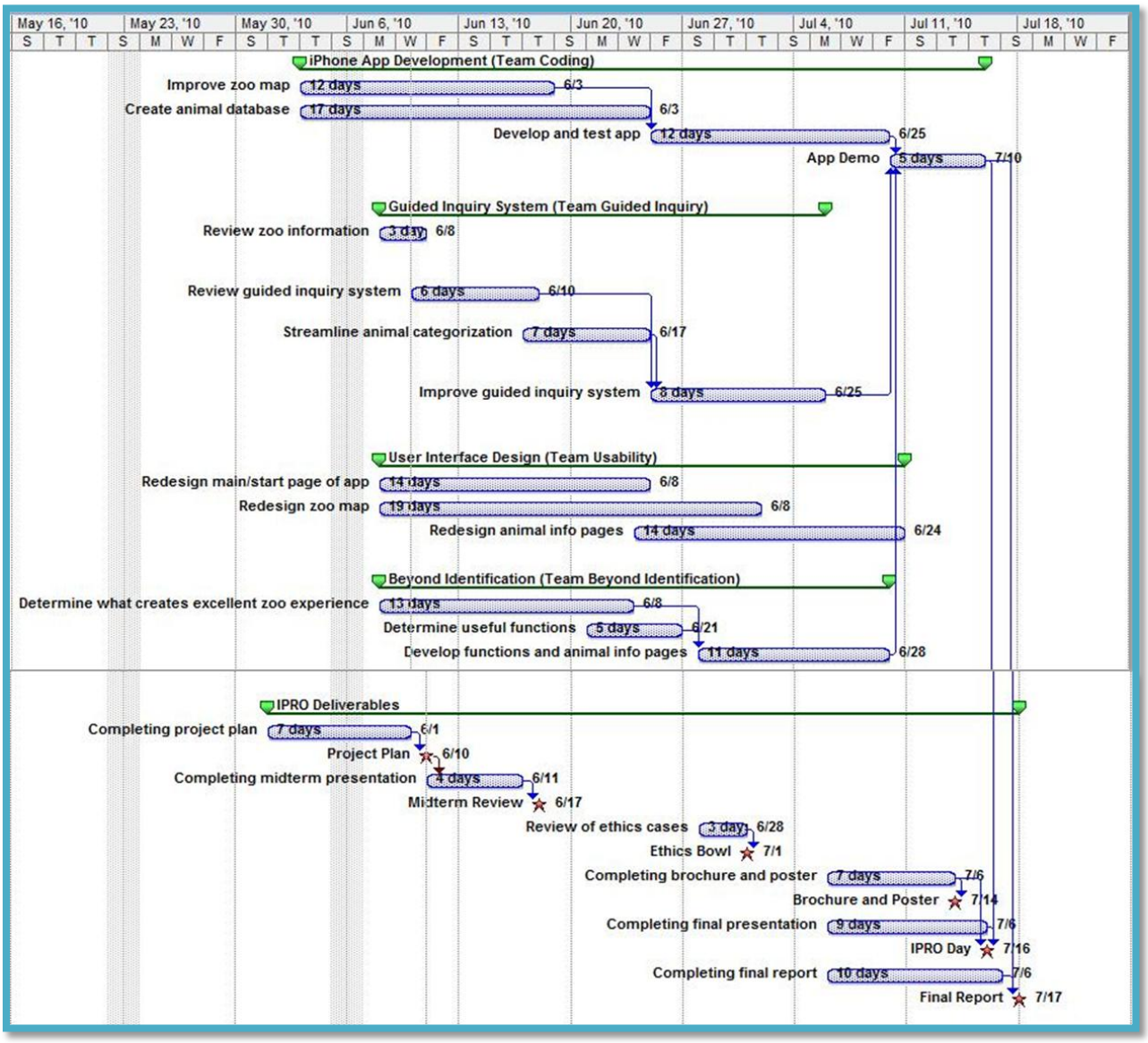
Subteam	Plan of Action

Beyond Identification	***Main Objective: To determine functions of the application that will enhance the zoo experience in addition to identifying animals.***
	
	Task 1: Determine what creates an overall excellent zoo experience
	- Team will create surveys to determine:
	  ○ What sort of information visitors find interesting/enlightening
	  ○ What an average visit lacks and how to improve it (visitor and zoo volunteer/staff perspective)
	Task 2: Determine useful functions
	- After analysis of survey results, team will create a list of functions that will enhance zoo experience (ex: games, use of social networks, etc.)
	- Team will decide on which function(s) to develop this semester
	Task 3: Developing function(s) and animal information pages
	- Team will spend the remainder of the semester researching and creating function(s)
	  ○ Team will work with other sub-teams to develop the function(s) for the app prototype.
	- Team will improve animal information pages
	  ○ Team will edit the information based on survey results
	  ○ Integration of developed functions

Guided Inquiry	***Main Objective: To fine-tune the guided inquiry process by clarifying previous questions.***
	
	Task 1: Review zoo information
	- Review information presented by Brookfield Zoo
	- Review past observations and information collected from zoo trips
	- Analyze observations from current zoo trip
	Task 2: Review guided inquiry system
	- Analyze questions in guided inquiry system
	  ○ Content and amount of questions
	- Review overall effectiveness of system
	  ○ Relevance at zoo
	Task 3: Streamline animal categorization
	Task 4: Improve guided inquiry system

	- Based on analysis of current system and streamlined animal categorization - Work with other subgroups to finalize system for application prototype
Coding	***Main Objective: To implement a map feature capable of tracking the user (GPS) and transfer to a database driven system.*** Task 1: Improve zoo map - Add orientation and GPS features - Update current map Task 2: Create animal database - Acquire existing database from zoo o Review and improve database for use in application development - Improve guided inquiry and animal information pages using database Task 3: Develop and test the iPhone application prototype - Refine map, database, guided inquiry, and animal information pages Task 4: Prepare demonstration of application
Usability	***Main Objective: To design a more aesthetically pleasing, efficient application interface.*** Task 1: Redesign the main/start page of the application - Review previous design and images - Edit options on start/main menu o Prominent options should include: map, hours, prices, the guided inquiry functionality, etc. Task 2: Redesign the map - Make the map more interactive - Study other iPhone applications Task 3: Redesign animal information pages - Break down text to avoid a single page with an overload of information o use blurbs, pictures, etc. o use links

B. Gantt Chart



C. Documentation

Throughout the semester, the members of IPRO 318 will document all files as Microsoft word documents and will upload such documents to the iGroups files, which are automatically archived in the IPRO files. Documents include: meeting minutes, summaries of zoo visits/observations, surveys, brainstorming /work process of each subteam, research, and zoo/animal information provided by Brookfield Zoo. Moreover, all media files (pictures, sound clips, video clips, etc.) related to the development of the application will be uploaded to iGroups. In addition, all files/programs related to the functionality of the application prototype will be gathered on a CD. Finally, all files will be backed up on a CD.

V. Expected Results

The main purpose of this project is to develop an interactive iPhone application that allows the user to identify Brookfield Zoo animals based on their specific characteristics. This technology then can be expanded and used as a foundation for future applications that encompass all animals within the zoo. The team will integrate multiple disciplines to produce a presentable working program, teaching all the members the value of working together and bringing specific knowledge to the group. The team overall expects to create a new version of the application prototype encompassing the features developed by each subteam.

The Guided Inquiry team expects to come up with a system that will enable the differentiation of animals through a series of inquiries in an efficient and logical manner. The Beyond Identification team will create an overall better definition of "excellent zoo experience" to guide the development of the application. They will also come up with a list of functions that will enhance one's zoo experience, in addition to the identification of animals through guided inquiry, for future development of the application. Furthermore, the Usability team will create a redesigned start page, map, and animal information pages for a more streamlined use. They will bring all the ideas of this team to life, while gaining insight into graphical interface systems and how to make them more appealing to target audiences. By expanding on the existing code for the application, the Coding team hopes to gain knowledge about iPhone programming and coding in general. They expect to update the zoo map as well as implement GPS features in addition to converting to a database driven system. They will also explore new technologies such as augmented reality and sound recognition.

Potential Obstacles to project success

- Programming and implementing features is limited by time.
- Conflict in schedules may restrict meeting outside of the classroom.
- People might not follow through with their responsibilities in a timely manner.
- Lack of communication between sub groups.
- Limited coding and iPhone application knowledge.

VI. Budget

Summary:

Transportation	**$416.50**
Miscellaneous	$50.00
TOTAL EXPENSES	**$466.50**

Transportation Details:

Public Transportation	**One Way**	**Round Trip**	**10 Rides Ticket**
CTA Train	$2.25	$4.50	$22.50
Bus Transfer	$0.25	$0.50	$2.50
Metra	$3.50	$5.00	$29.00
Total Per Person	**$6.00**	**$10.00**	**$54.00**
Overall Total (* 5.5)	**$36.00**	**$56.00**	**$311.50**

Vehicle Transportation	**One Way**	**Round Trip**
Distance Miles	15mi	30mi
Mileage Reimbursement ($0.50/Mile)	$7.50	$15.00
Total Per Person		$15.00
Overall Total (*7)		**$105.00**

VII. Team Information

A. Team Roster

Name	Contact Info	Major/Year	Availability	Skills/Attributes
Ahmed, Syeda	sahmed32@iit.edu emeraldlily06@gmail.com [redacted]	Molecular Biochemistry and Biophysics/4th	Sun-Wed 9am-7pm, Thu-9am-4pm	Presentation, writing, computer (Microsoft office) and laboratory skills. Frequent volunteer at elementary school, visits Brookfield Zoo yearly
Callas, Kathleen (Kat)	kcallas@iit.edu [redacted]	Humanities/3rd	Anytime	Writer, former biology major, and worked/volunteered at Brookfield Zoo for 3 years as a Roving Naturalist/Docent
Chun, Jason	Jchun4@iit.edu Chunord@gmail.com [redacted]	Computer Engineering/3rd	M/W: before 12:10 after 2:50 T/TH: before 3 after 5:40	Object oriented programming
Davis, Derrick**	davisde@iit.edu derrickjdavis2 (skype) [redacted]	Information Technology and Management (ITM)/4th	Anytime through Skype or E-mail M/W/F: 9-11am or 4:30-7:00pm T/Th: 2-7pm	Object-Oriented Programming (OOP) Languages (C#, C++, Java, JavaScript, HTML, HTML5, CSS, Python) E-Commerce/Web Development
Erwin, Elaine	eerwin@iit.edu [redacted]	Architecture/3rd	M/W: before 6pm T/Th: before 3pm	Writing, Visuals for presentations, Teamwork/communication
Ferrari, Howard	hferrari@iit.edu [redacted]	Civil Engineering/4th	Anytime	Communication, presentation skills, autocad, familiar with iPhone applications
Garczek, Katherine (Kathy)	kgarczek@iit.edu kgarczek@gmail.com [redacted]	Biology with Psychology minor/3rd	Anytime, specifically Wed and Sun	Communication and Management Skills, Human Relations and Interpersonal Skills, Critical Thinking and Writing Skills
Madimenos, Anastasia	amadimen@iit.edu [redacted]	Architecture/4th	Anytime	Writing skills, Presentation skills, Communication skills, Team skills
Mithun, Michael	mmichae2@iit.edu [redacted]	ECE/4th	Anytime	Presentation skills, computer programming skills
Morrison, Ruth	rmorris5@iit.edu dragonflykes@gmail.com [redacted]	CIS/4th	M/W/F/Sat/Sun: Anytime (off-campus) T/Th: 10am-11:30am (on campus)	Experience with GUI design and implementation, OOP/C++, etc. Somewhat familiar with gimp.
Potacki, Amanda	apotacki@iit.edu [redacted]	Architecture/3rd	M/ W: before 12pm T/Th: before 3pm	Writing, team skills, making visuals for presentations

Rojas, Diana (Catalina)	drojas2@iit.edu [redacted]	Mechanical Engineering/4th	M-F: Anytime (provided reasonable commuting time)	Worked in product development for a pharmaceutical company writing testing protocols and analyzing data. Good time management, Unique combination of technical and business related skills, Detailed oriented, Bilingual English/Spanish.
Szulyk, Natalie*	nszulyk@iit.edu [redacted]	Psychology/4th	T/ Th: Anytime	Microsoft word, interpreting data, previously worked on IPRO 318

*Minute Taker
** Team Leader

B. Team Structure

Subteam	Members
Team Guided Inquiry	Natalie Szulyk*, Elaine Erwin, Amanda Potacki, Kathleen Callas
Team Beyond ID	Syeda Ahmed*, Anastasia Madimenos, Katherine Garczek, Diana Rojas
Team Usability	Ruth Morrison*, Howard Ferrari, Jason Chun
Team Coding	Derrick Davis*, Michael Mithun

*Subteam Leaders