IPRO 309 Project Plan

Fall 2009

Orthotics and Prosthetics in Latin America

Advisors: Professor Kevin Meade

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1.0 BACKGROUND

There exists a strong demand for orthotics and prosthetics (O & P) in Latin America, with approximately 2.5 million people in need of this type of care. IPRO 309 was started in the spring of 2006 with the goal of helping to make this type of care more readily available. However, there are only 50 certified and 1500 uncertified, O & P practitioners in Latin America. In order to become a certified practitioner, a student must graduate from an ISPO accredited program. Unfortunately, there is currently only one ISPO accredited program in existence in Latin America, along with several other programs that are not ISPO accredited. In October of 2004, Centro Don Bosco (Bogotá, Colombia), Don Bosco University (San Salvador, El Salvador), and the Laboratorio Gilete (Bogotá, Colombia) signed an agreement to establish the first accredited O & P education program in Colombia. Since then, Centro Don Bosco has allotted 3,500 square feet of space for the thriving faculty, classrooms, manufacturing training, and vocational workspace that are necessary for an ISPO accredited program.

There are three levels of accreditation according to ISPO standards. Category III involves the design and manufacturing of orthotic and prosthetic devices, Category II includes the fabrication of the devices as well as direct patient care, and Category I includes production, treatment for patients, and research and development. The equivalent to ISPO in the United States is the American Board of Certification in Orthotics and Prosthetics (ABC). Because it is independent from the ISPO, the ABC standards of accreditation will need to be taken into account in order to carefully cross cultural and national boundaries.

Now that the program has started at Centro Don Bosco in Bogotá and the goal is to achieve Category III accreditation. For students who begin the program, the chances for career advancement are greatly increased with the possibility of attaining Category II (or further) certification. Classes opened first in February 2005 with 17 students. Though the number of students may be small, their impact will be massive; in one year, each student can produce over 250 orthotic and prosthetic devices. The first graduating class can therefore affect a total of over 100,000 patients throughout a projected career of 25 years. This can be accelerated with the aid of IPRO 309 by creating educational modules necessary for the program to receive ISPO accreditation while providing basic material to students interested in the program.

In addition, several other institutes have joined to provide education and care to those in need. These institutions are listed below.

- Universidad de los Andes; Bogotá, Colombia
- La Escuela Colombiana de Rehabilitación; Bogotá, Colombia

- Centro Don Bosco, Bogotá; Colombia
- Laboratorio Gilete, Bogotá; Colombia
- Bioconcepts, Inc.; Burr Ridge, IL
- Dynamic Orthotics and Prosthetics; Houston, TX
- Children's Memorial Hospital; Chicago, IL
- Joliet Junior College Tech Prep Program; Joliet, IL
- Northwestern University Prosthetics and Orthotics Center; Chicago, IL
- Illinois Institute of Technology, Chicago, IL

2.0 OBJECTIVES

IPRO Objective:

The overall goal of our IPRO team is to create a program for delivering orthotics and prosthetics that is sustainable. This will be accomplished by improving the quality of the product by increasing availability of funding, improving cost effectiveness of prosthetics, and promoting awareness of treatment available. Our IPRO team has divided the project into three separate subgroups: Business, Technical, and Impact.

Subgroup Objectives:

Business: To create a business plan to create public awareness that is sustainable.

Technical: Improving the efficiency and cost of prosthetics for use in impoverished countries.

Impact: The overall convergence of the Business and Technical Side to provide a complete picture.

3.0 METHODOLOGY/EXPECTED RESULTS

3.1 Group Methodology

This IPRO seeks to build a sustainable program and propose a method to increase the efficiency of Prosthetics and Orthotics education in Latin America. This will be accomplished by working closely with Don Bosco University, Colombia and Joliet Junior College, Illinois after getting exposure to what has been accomplished so far. The project team will aim to make use of every member's individual skills and strengths. The IPRO team realizes that the current ISPO Category III program in Bogotá does not have a business plan. As a result, there is no significant career opportunity for orthotics and prosthetics (O&P) or funding methods for the growth of the program. In addition, the group plans to work towards increasing effectiveness in the devices, and promoting social awareness of Prosthetics and Orthotics through education materials.

In order to accomplish the problems set forth in part A, the IPRO group began analyzing the work that was done in the IPRO since it started in 2006. This was done to observe the areas where the group could be able to provide aid for efficiency. Three sub-groups were then formed consisting of three to four members working on an area requiring growth and improvement. The following are the three sub-groups:

Business

Technical

Impact

The team will work towards a common goal, and wishes to propose the goal with appropriate reasons to Don Bosco University, Colombia. Each sub-group has identified all of the tasks that must be completed in order to fulfill the goals as well as reach the main objective of the IPRO project. Research will be conducted by individual sub-group into current technical and business states of the IPRO project by observing the work of previous semesters, specifically their deliverables. Research will be conducted to discover what resources are available (technology, financial resources), and the use of comparative effectiveness research will be utilized.

3.2 Research

The Business group will be translating documents sent to the team by Don Bosco University. The Technical group will do research on the methods used to build a limb —from beginning to the end — in order to find a method for maintaining or improving the device's efficiency after reduction of production costs.

The Impact group will be researching methods that can be used for Transfer Technology, Social Awareness and Prosthetic and Orthotic Education with the business modeling. All three subgroups will create surveys / public polls to gain an insight into the public knowledge of the growing need for O&P devices in Latin America.

3.3 Communication

The three groups will collaborate and combine information. Weekly updates including timelines specific to goals will be required for the remainder of the semester. Each subgroup will host separate meetings between each session. Every Tuesday session of the IPRO, subgroups will be required to give the entire team a 5-10 minute presentation on their current progress and goals for the upcoming week. In addition, groups will communicate use the IGroups portal to send emails and upload files.

3.4 Subgroup Deliverables

The three subgroups will analyze data from the rest of the team and begin creating specific deliverables used to implement and establish a self-sustaining program, specifically for Centro Don Bosco of Bogota, Colombia. This program will be parallel with Joliet Junior College in Joliet, IL, USA.

The Business team will be creating models based on fundraising ideas, review grant options, and fund management ideas based upon research. The technical team will try to propose a solution model to increase the effectiveness of the prosthetic and orthotic devices making it even more cost efficient. The impact team will create a model to have more effective methods of Public Awareness and Transfer Technology.

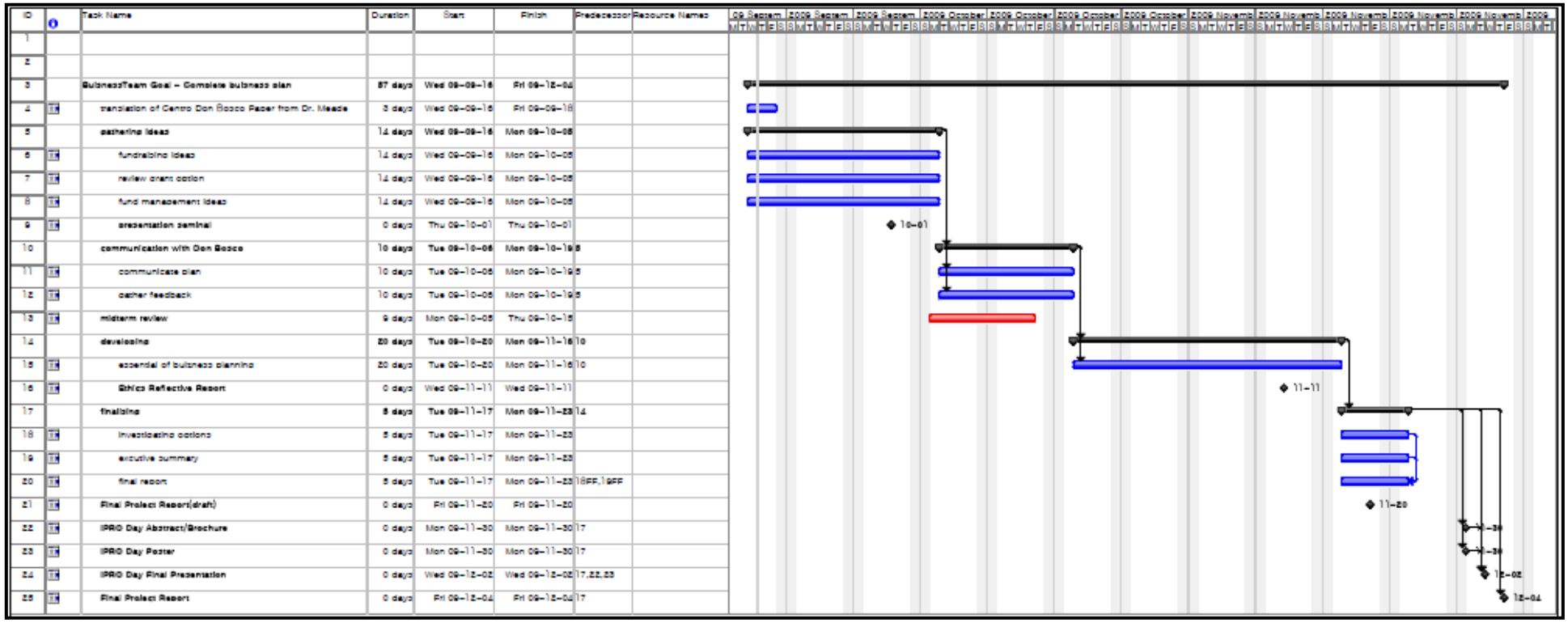
3.5 Testing and Analysis

The entire team will be informed of the strategies, techniques, and prototype models of each sub-group as well as the results of initial testing. All data will be reviewed by team members. Input from Joliet Junior College (JJC) in Illinois, U.S, and Centro Don Bosco in Colombia will be used during analysis. Each group will repeat testing and designing so that the final models/proposals of each sub-group effectively accomplishes the original objectives set forth.

Subgroups will be held responsible for completing a section of the final report and other deliverables for IPRO day. A rough draft of the report will be discussed in class prior to submission. All posters and other deliverables will be reviewed and approved by the IPRO team. Sub-groups will also display their final design or model in some form during IPRO day.

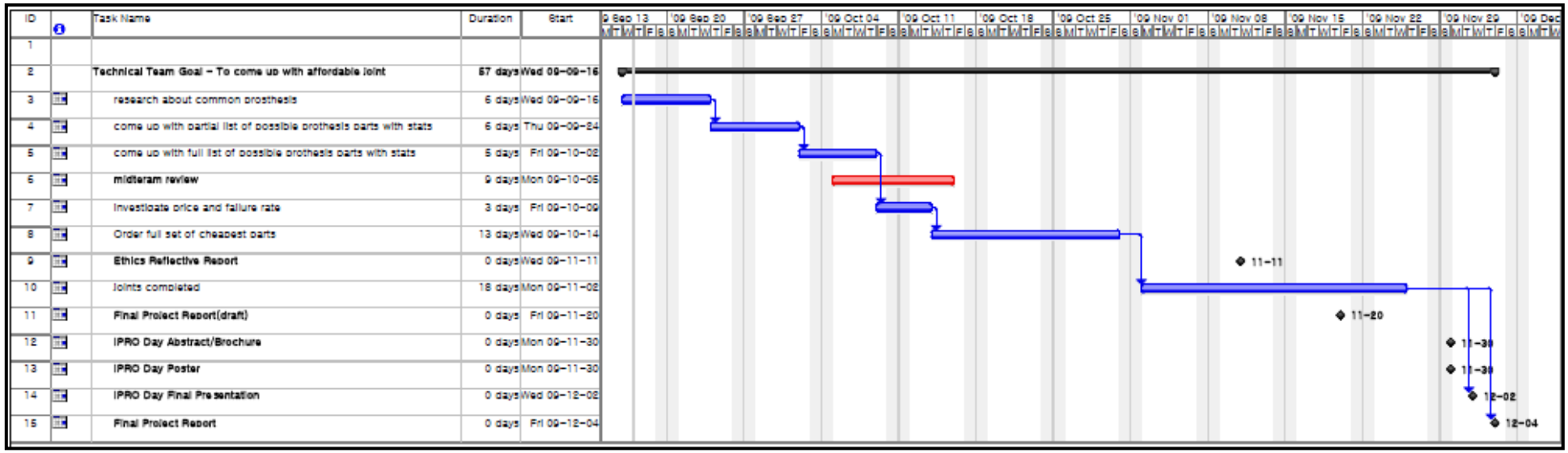
3.6 Gantt Charts

3.6.1 Business Group Gantt Chart



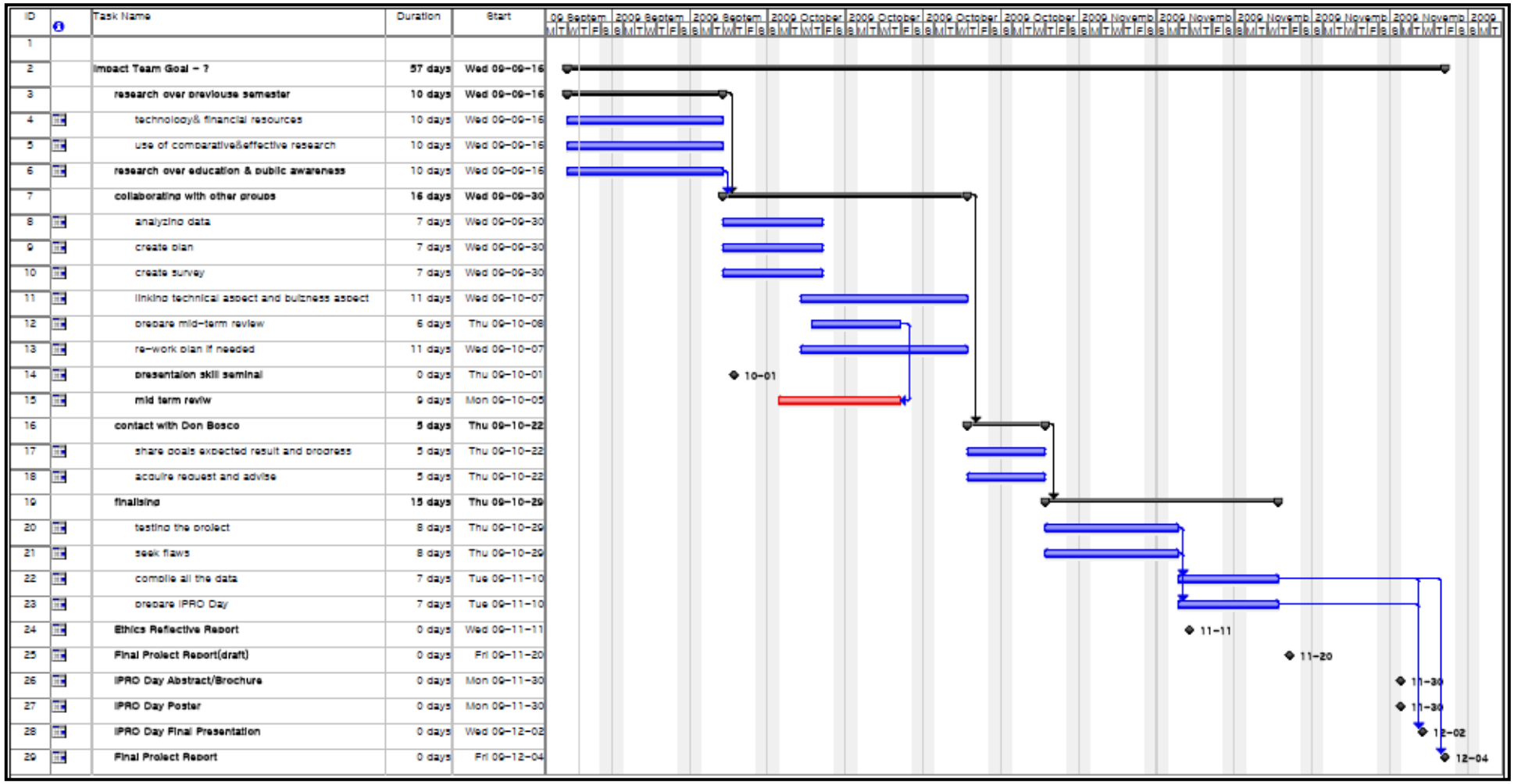
ID	Task Name	Duration	Start	Finish	Predecessor	Resource Names
1						
2						
3	BusinessTeam Goal – Complete business plan	87 days	Wed 09-09-16	Fri 09-12-04		
4	translation of Centro Don Bosco Paper from Dr. Meade	3 days	Wed 09-09-16	Fri 09-09-18		
5	gathering ideas	14 days	Wed 09-09-16	Mon 09-10-05		
6	fundraising ideas	14 days	Wed 09-09-16	Mon 09-10-05		
7	review grant option	14 days	Wed 09-09-16	Mon 09-10-05		
8	fund management ideas	14 days	Wed 09-09-16	Mon 09-10-05		
9	presentation seminal	0 days	Thu 09-10-01	Thu 09-10-01		
10	communication with Don Bosco	10 days	Tue 09-10-06	Mon 09-10-19	8	
11	communicate plan	10 days	Tue 09-10-06	Mon 09-10-19	5	
12	gather feedback	10 days	Tue 09-10-06	Mon 09-10-19	5	
13	midterm review	9 days	Mon 09-10-05	Thu 09-10-15		
14	developing	20 days	Tue 09-10-20	Mon 09-11-16	10	
15	essential of business planning	20 days	Tue 09-10-20	Mon 09-11-16	10	
16	Ethics Reflective Report	0 days	Wed 09-11-11	Wed 09-11-11		
17	finalizing	5 days	Tue 09-11-17	Mon 09-11-23	14	
18	investigating options	5 days	Tue 09-11-17	Mon 09-11-23		
19	excutive summary	5 days	Tue 09-11-17	Mon 09-11-23		
20	final report	5 days	Tue 09-11-17	Mon 09-11-23	18FF,19FF	
21	Final Project Report(draft)	0 days	Fri 09-11-20	Fri 09-11-20		
22	IPRO Day Abstract/Brochure	0 days	Mon 09-11-30	Mon 09-11-30	17	
23	IPRO Day Poster	0 days	Mon 09-11-30	Mon 09-11-30	17	
24	IPRO Day Final Presentation	0 days	Wed 09-12-02	Wed 09-12-02	17,22,23	
25	Final Project Report	0 days	Fri 09-12-04	Fri 09-12-04	17	

3.6.2 Technical Group Gantt Chart



ID	Task Name	Duration	Start
1			
2	**Technical Team Goal – To come up with affordable joint**	**57 days**	**Wed 09-09-16**
3	research about common prosthesis	6 days	Wed 09-09-16
4	come up with partial list of possible prothesis parts with stats	6 days	Thu 09-09-24
5	come up with full list of possible prothesis parts with stats	5 days	Fri 09-10-02
6	**midteram review**	9 days	Mon 09-10-05
7	investigate price and failure rate	3 days	Fri 09-10-09
8	Order full set of cheapest parts	13 days	Wed 09-10-14
9	**Ethics Reflective Report**	0 days	Wed 09-11-11
10	joints completed	18 days	Mon 09-11-02
11	**Final Project Report(draft)**	0 days	Fri 09-11-20
12	**IPRO Day Abstract/Brochure**	0 days	Mon 09-11-30
13	**IPRO Day Poster**	0 days	Mon 09-11-30
14	**IPRO Day Final Presentation**	0 days	Wed 09-12-02
15	**Final Project Report**	0 days	Fri 09-12-04

3.6.3 Impact Group Gantt Chart



ID	Task Name	Duration	Start
1			
2	Impact Team Goal – ?	57 days	Wed 09-09-16
3	research over previouse semester	10 days	Wed 09-09-16
4	technology& financial resources	10 days	Wed 09-09-16
5	use of comparative&effective research	10 days	Wed 09-09-16
6	research over education & public awareness	10 days	Wed 09-09-16
7	collaborating with other groups	16 days	Wed 09-09-30
8	analyzing data	7 days	Wed 09-09-30
9	create plan	7 days	Wed 09-09-30
10	create survey	7 days	Wed 09-09-30
11	linking technical aspect and bulzness aspect	11 days	Wed 09-10-07
12	prepare mid-term review	6 days	Thu 09-10-08
13	re-work plan if needed	11 days	Wed 09-10-07
14	presentation skill seminal	0 days	Thu 09-10-01
15	mid term reviw	9 days	Mon 09-10-05
16	contact with Don Bosco	5 days	Thu 09-10-22
17	share goals expected result and progress	5 days	Thu 09-10-22
18	acquire request and advise	5 days	Thu 09-10-22
19	finalising	15 days	Thu 09-10-29
20	testing the project	8 days	Thu 09-10-29
21	seek flaws	8 days	Thu 09-10-29
22	compile all the data	7 days	Tue 09-11-10
23	prepare IPRO Day	7 days	Tue 09-11-10
24	Ethics Reflective Report	0 days	Wed 09-11-11
25	Final Project Report(draft)	0 days	Fri 09-11-20
26	IPRO Day Abstract/Brochure	0 days	Mon 09-11-30
27	IPRO Day Poster	0 days	Mon 09-11-30
28	IPRO Day Final Presentation	0 days	Wed 09-12-02
29	Final Project Report	0 days	Fri 09-12-04

4.0 PROJECT BUDGET

Without a concrete amount of funds being appropriated to IPRO 309, this is a breakdown of projected areas in which funds may be needed and in the order in which they are most necessary.

ITEM	UNIT PRICE	QTY	PRICE	PURPOSE
Prosthesis/ circuit parts ext			$500.00	Equipment for technical group
Field Trips	$150	3	$450.00	To have a better knowledge of Orthotics and Prosthetics.
photocopies /computer printing	$20.00	10	$200.00	Incentive for filling out surveys
Total:			$1150.00	

5.0 TEAM STRUCTURE AND ASSIGNMENTS

5.1 Team Strengths and Skills

Team Member	Skills	Learning needs	Expectations
Ashley, Trevor	-Problem solving -Leadership within a group, -Willingness to learn to skills	Working with others that don't share the same idea as me and to compromise with them	To learn something about the materials and bio-mechanics of prosthetics and orthotics
Claxton, Matt	-ProE -Solid Works -CAD Key -MS Office Suite -Team Oriented -Detail Attentive	Working with team	I hope that the work done this term will benefit the long term goals of this IPRO
Conover, Stephen	-Matlab -Microsoft Office -Decent multi-tasking -Some circuitry knowledge	Learn more about the circuitry that goes into prosthetics.	To learn more about prosthetics, how they work and how they're built.
Gotanco, Francis	-Microsoft Office -Organizing events -Research -Coordinating teams and information, etc.	Learning the business side of a technical project	Field Trips and to make a difference in the lives of those who live in Bogota Colombia.
Mathai, Alexander	-Understanding of efficient human movement as an athlete -Engineering skills from civil engineering program.	Time management	Interest in bio mechanics and kinesiology
Nizich, Adam	-Planning Trips -Problem Solving -Structural Analysis -Mathcad -International Development	-Business Planning -International Development	Completion of IPRO help OP education
Park, Yong	-Auto Cad -3D Max(3D renderer) -Photoshop -Illustrator -Dreamweaver -Photography -Great focus -Design Oriented -Military Experience	Cannot do multitask	Completion of IPRO
Quikr, Kerry	-Spanish language skills -Knowledge of the history and political climate of Colombia -Knowledge of the governmental structure of Colombia basic -Cultural knowledge of Latin America	basic knowledge about the function and development of prosthetics, an increased knowledge of how to create and develop business plans for companies	To help make a difference in the Colombian society, both with Don Bosco as well as those who are impacted by those educated at Don Bosco
Ray, Monmayuri	-Matlab -Labview -Autocad 2000 -ProE -Microsoft Office -C/C++ -Visual Basic -Java -Multi-tasking, hard-working, well spoken, goal-oriented	-Business Planning -Team Work -Learning methods for social awareness.	To be able to make a difference and making the program of Orthotics and Prosthetics education more efficient in Colombia.
Vasquez, Raul	-Strong leadership skills -Work very well with others	I hope to master my delegation skills	I'm hoping to really do something important and meaningful with this IPRO.

5.2 Team Structure

5.2.1 Sub-Teams:

1. Business
    - Adam Nizich
    - Kerry Quirk
    - Francis Gotanco
    - Yong Park

2. Technical
    - Raul Vasquez
    - Alexander Mathai
    - Stephen Conover

3. Impact
    - Monmayuri Ray
    - Matt Claxton
    - Trevor Ashley

5.3 Sub-Team Responsibilities

1. Business

Task	Group Member
Executive Summary	Kerry Quirk
Market Analysis	Yong Perk
Company description	Kerry Quirk
Organization and management	Kerry Quirk
Marketing and sales management	Yong Perk
Service or product line	Adam Nizich
Funding request	Adam Nizich

2. Technical:

Task	Group Member
Deliverables planning	Alex, Raul, Stephen
Colombia primary contact	Stephen Conover
Research O&P parts and pieces used	Raul Vasquez
Research alt. materials for orthotics	Stephen Conover
Statistical Comparison	Alex, Raul, Stephen

3. *Impact:*

Task	Group Member
Research on Transfer Technology Methods	Monmayuri Ray
Research on Education Methods	Trevor Ashley
Research on Social Awareness Methods	Matt Claxton
Modeling Solution	Monmayuri, Trevor, Matt

***** Due to the small size of each sub-team (one to two members each), no sub-team leaders have been designated. The IPRO team leader will be responsible for tracking the progress of each sub-team.***

5.3 Designation of Roles

- **Project Manager** – Raul Vasquez
  Coordinates meetings and sets member assignments

- **Minute** Taker—Trevor Ashley
  Takes notes throughout class

- **Agenda Maker** – Francis Gotanco
  Creates agendas for every meeting

- **Field Trip** – Adam Nizich
  Coordinates group field trips that may be useful towards project

- **Spanish Translation Engineer** – Kerry
  Spanish translation of necessary materials

- **Accreditation Expert** – Matt

- **iGroups** – Stephen Conover
  Monitors iGroups Page

- **IPRO Day Planner** – Monmayuri Ray
  Coordinates IPRO Day

- **Webmaster** – Yong
  Maintains team website

- **Ethics Monitor** – Alex Mathai
  Understanding of all ethical issues surrounding project