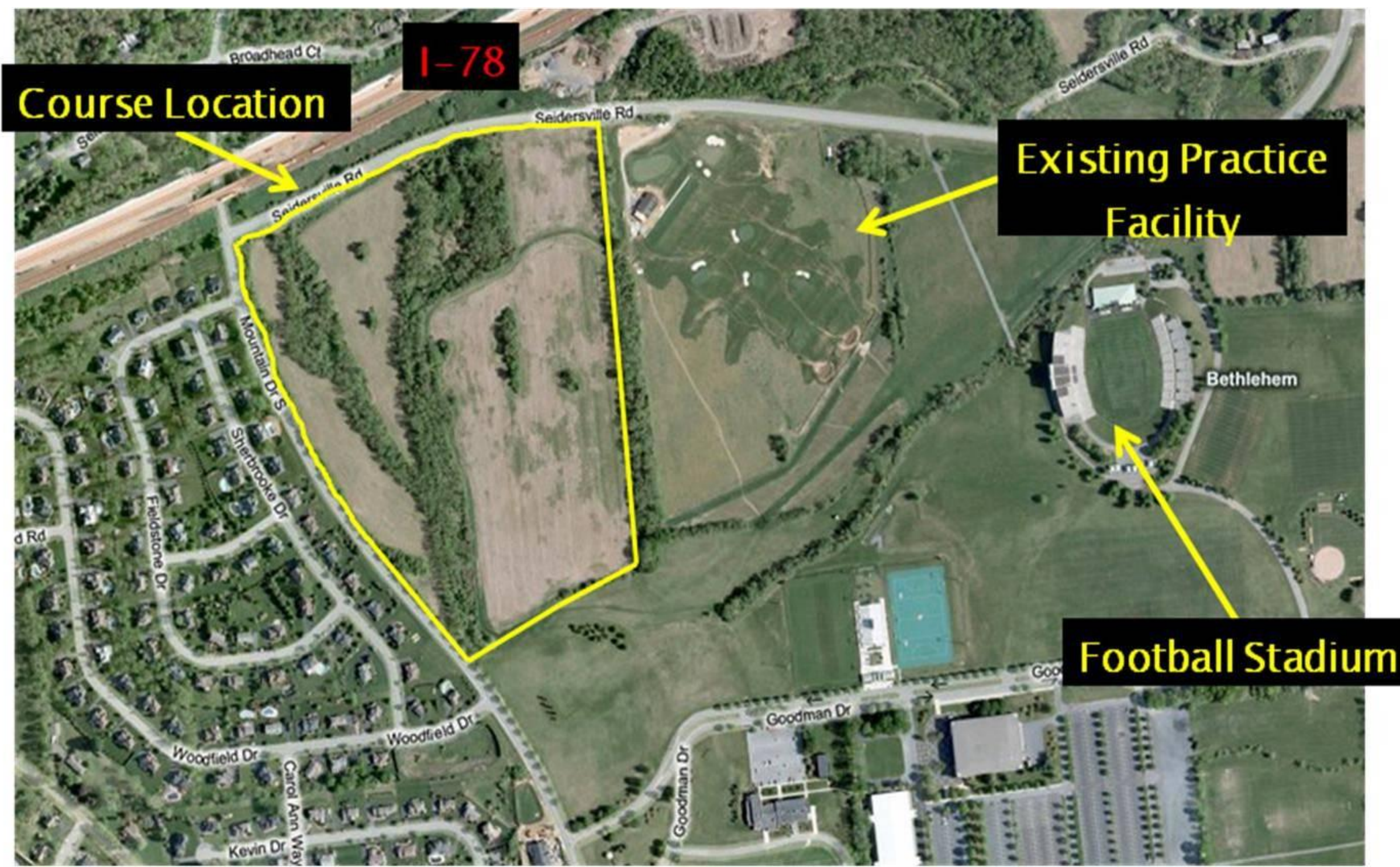


Golf Course Planning & Operation Analysis 2008

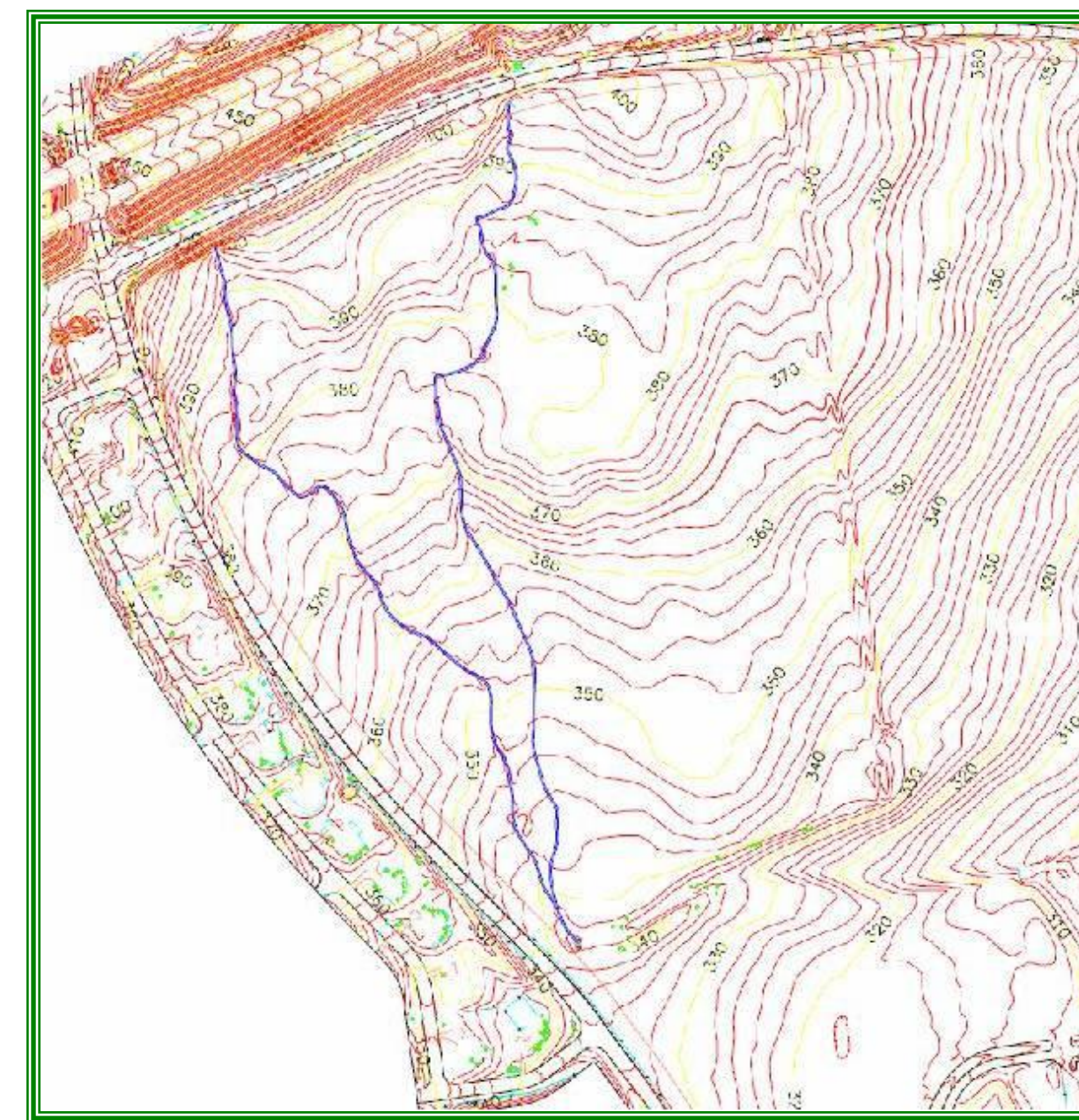


Integrated Learning Experience

Zachary Peters

William Robinson

About ILE: The Integrated Learning Experience (ILE) is a design course consisting of interdisciplinary undergraduate students focused on creating a 'real world' experience in which students work as a consulting team to address the specific challenges of the project.



Team Descriptions

Logistics - Simulation

Project Management

- Create a process flow chart outlining the necessary outputs of each group and their scheduled delivery dates. Oversee that all subgroups work in conjunction with one other to accomplish tasks in an efficient and timely manner.

Flow Logistics

- Create a computer simulation to determine the best overall layout of the course (order and length of holes) to maximize overall efficiency. Model expected customer flow existing and predicted data. Determine the seasonal customer totals to deliver to the business group for revenue calculations.

Civil Engineering - Features

Course Layout

- Develop several course layouts and configurations to determine how many holes could be built, taking into account the results of the survey.

Irrigation

- Calculate the water needs for various course configurations and propose the irrigation source, taking into account the associated costs.

Other Considerations

- Explore considerations for additional parking, and re-routing the cross-country course. Evaluate the zoning, wetlands, and drainage regulations.

Business - Cost, Revenue and Pricing Strategy

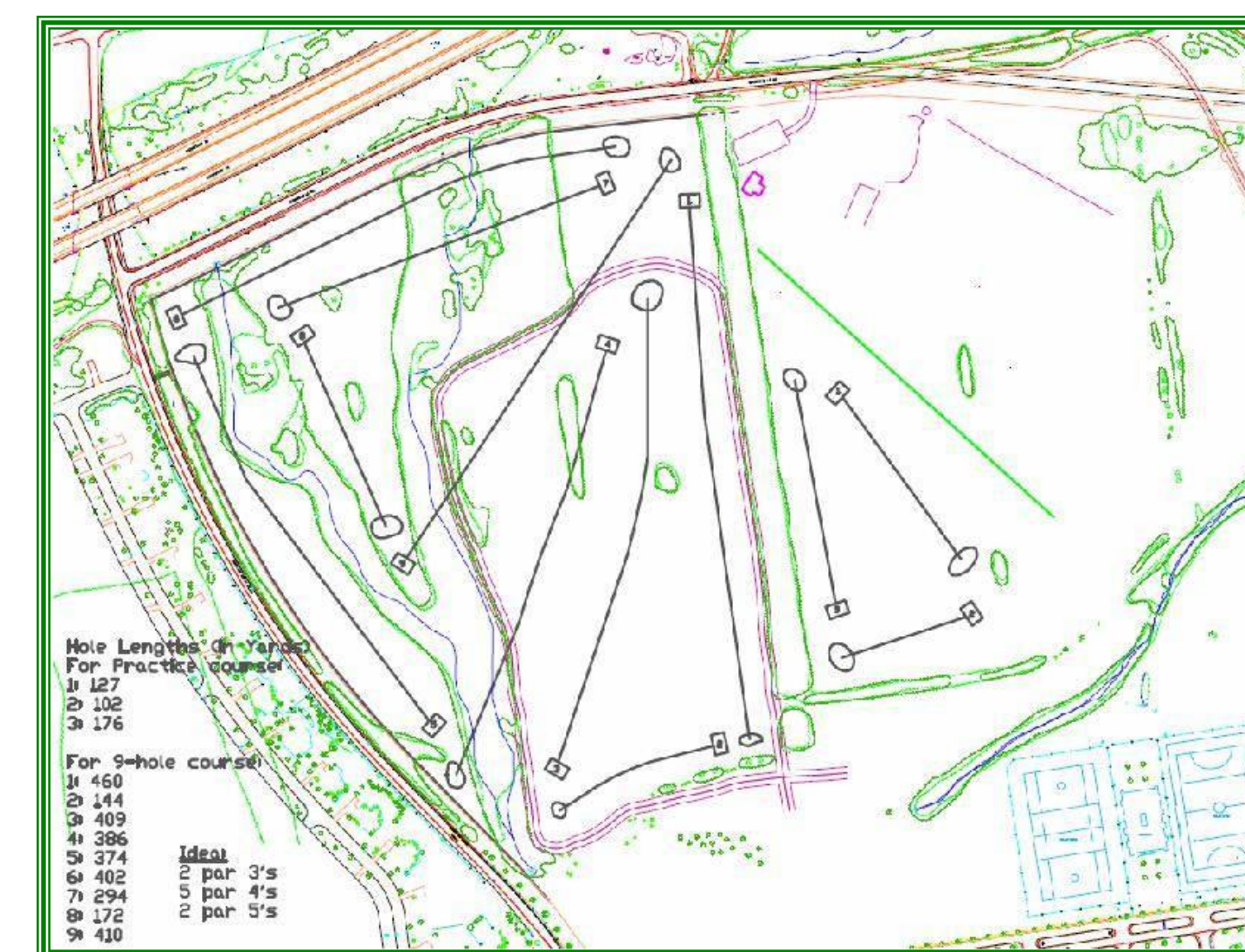
Pricing Strategy

- Conduct market research within the Lehigh Community to gauge the interest level, pricing effects, and desired course features associated with the project. Develop revenue projections that incorporate an effective pricing strategy. Consider a break-even model.

Cost Analysis

- Determine the operation and maintenance costs associated with each of the proposed course designs. Evaluate personnel and equipment requirements of the facility and devise replacement schedules for the equipment. Create schedules for the upkeep of the course.

The engineering team used topographic and site maps to develop a nine-hole course and incorporate it into the site on Goodman Campus



Average values determined by the logistics group, based on the approximate course layout designed by the engineering group.

Distribution of group sizes

Group Size	Occurrence
1	5%
2	20%
3	40%
4	35%

Total Annual Costs (with Triplex):	
Total Annual Cost	\$ 355,327.27
Total Upfront Cost	\$ 1,480,748.45
Par 3 Per Hole Cost	
Total Annual Cost per hole	\$ 22,126.61
Par 4 Per Hole Cost	
Total Annual Cost per hole	\$ 49,459.47
Par 5 Per Hole Cost	
Total Annual Cost per hole	\$ 72,887.65

The Learning Loop: We introduced an easier three-hole learning loop below the extents of the existing practice facility to appeal to beginner skill level golfers.

Approach Swing Time per Shot	
Tee Shot	30 Sec (6)
Fairway Shot	42 Sec (9)
Putt	48 Sec (15)

Break-Even Analysis: The business group developed a pricing strategy based on a break-even model, where the cost of maintenance equaled the incoming revenue

Break-Even 9-Hole Course Revenue Projections	
Fall Revenue (13 weeks)	\$ 132,291.43
Summer Revenue (14 weeks)	\$ 39,875.87
Additional Summer Revenue	\$ 12,860.00
Spring Revenue (9 weeks)	\$ 127,437.70
Additional Revenue	\$ 43,841.00
Learning Loop Revenue	\$ 66,820.28
Total Revenue	\$ 423,126.28
Total Annual Revenue with 90% Playability	\$ 409,163.11

Initial Project Schedule:

	15-Sep	22-Sep	29-Sep	6-Oct	13-Oct	20-Oct	27-Oct	3-Nov	10-Nov	17-Nov	24-Nov	1-Dec	8-Dec
Business Group	Investigate local courses (process/keep costs)			Order/Market Research				Pricing and Cost Analyses					
Logistics Group	Research Throughput Data for Simulation							Finalized Simulation Runs					
Civ Eng Group	Review Old Reports	Process Pond AutoCAD drawings						Edit CAD Drawings based on Survey Results					
Misc.	Student Organizations	Distribute Survey						Midterm Pres. (?)					

	Walking Times per Shot		
	Tee Shot	Fairway Shot	2nd Fairway Shot
Par 3	2 Min (.5)		
Par 4	3 Min (1)	2 Min (.35)	
Par 5	3 Min (1)	2.25 Min (.5)	2 Min (.35)

Special thanks to our advisors, Drs. Joe Sterret, Vince Munley, and Rick Weisman for their help and guidance on this project.