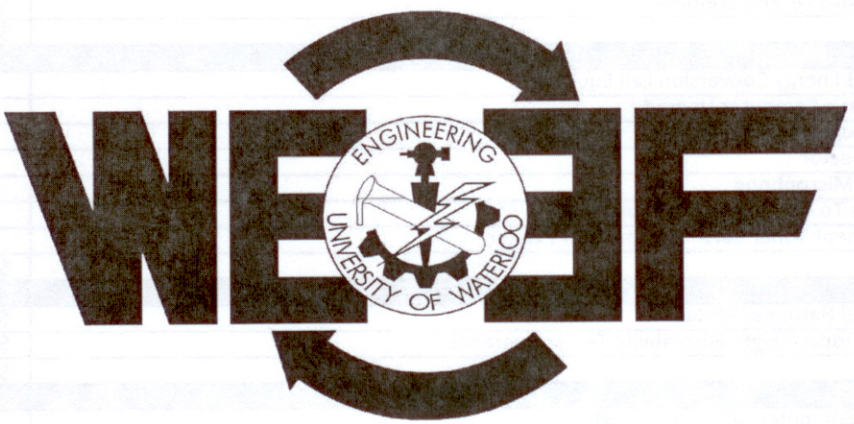

PROPOSALS

Spring 2008

Spring 2008 Proposals			
Page #	Prop. #	Title	Requested
Architecture			
3	1	Gis Machine Upgrade	$3,500.00
5	2	Workshop metalworking tools	$9,705.72
6	3	Workshop hand tools	$825.79
Total:			$14,031.51
Chemical Engineering			
8	4	Chemical Engineering Fourth Year Room	$4,400.00
10	5	Pressure Regulators For Che 391 Fuel Cell Experiment	$1,660.00
11	6	Upgrade Ph And Conductivity Meter For Che 290	$2,700.00
Total:			$8,760.00
Civil Engineering			
12	7	Printer for Enviro/Geo Room.	$820.00
14	8	Allegro Cx Data-Logger	$5,595.00
16	9	Pressure Calibrator	$2,070.00
17	10	Class Communication Board	$963.65
18	11	Desk Repairs Or Replacement	$10,199.40
Total:			$19,648.05
Electrical and Computer Engineering			
19	12	CPH-1333 Energy Conversion Lab Equipment	$2,137.68
23	13	E&CE Nexus Computer Upgrade	$6,000.00
25	14	E&CE Nexus Monitor Upgrade	$5,175.00
26	15	Data Projector	$870.00
28	16	Wireless Microphone	$380.40
30	17	Upgrades To The ECE 4th Year Lounge	$3,000.00
32	18	Replacement Toner Cartridge For Laser Printer	$129.94
Total:			$17,693.02
Mechanical Engineering			
33	19	Superficial Hardness Tester	$13,115.52
35	20	Limiting Dome Height Formability Tester Upgrades	$15,650.00
Total:			$28,765.52
Systems Engineering			
37	21	Systems Computer Lab PC's Upgrade	$6,000.00
38	22	LabVIEW Software License	$200.00
39	23	Healthy Aging and Energy Harvesting Design Prototyping	$540.00
Total:			$6,740.00
Department Total:			**$95,638.10**
Student Teams			
41	24	Uwire Autonomous Robot Racing Challenge	$3,269.98
43	25	*2009 UW Formula SAE Team*	$5,500.00
46	26	2009 Great Northern Concrete Toboggan Team	$7,900.00
48	27	The Iron Warrior	$3,000.00
50	28	Bringing The Ontario Engineering Competition To Waterloo In 2010	$15,000.00
52	29	Funding For Engineering Orientation Week	$3,000.00
54	30	University Of Waterloo Robotics Team	$4,188.00
56	31	Sustainable Technology Education Project (STEP)	$567.67
59	32	UWAFT Spring 2008 Proposal	$12,835.00
61	33	Spring 2008 Clean Snowmobile Team - Chassis, Engine, And Sound Equipment	$9,616.50
63	34	International Genetically Engineered Machine (Igem) Competition	$3,200.00
65	35	Warg Construction Supplies, Avionic And Communication Equipment, And Materials	$5,440.00
67	36	Liquid Fuel Rocket	$1,200.00
69	37	University of Waterloo Nanorobotics Group Proposal	$5,589.70
72	38	University of Waterloo Underwater Technology Team – Construction of Neo II	$5,112.26
76	39	Purchase Of Two Coolers For Engineers Without Borders	$54.80
77	40	2008 Spring Term Wombat Funding Proposal	$6,310.00
Total:			**$91,783.91**
Overall Total:			**$187,422.01**

WEEF Proposals & Allocations	Spring 2008	
Architecture	Requested	Allocated
GIS Machine Upgrade	$ 3,500.00	$ 3,500.00
Workshop Metalworking Tools	$ 9,705.72	$ 4,273.86
Workshop Hand Tools	$ 825.79	$ 825.79
		$ 8,599.65
Chemical		
Chemical Engineering Fourth Year Room	$ 4,400.00	$ 4,400.00
Pressure Regulators for ChE 391 Fuel Cell Experiment	$ 1,660.00	$ 1,660.00
Upgrade pH and Conductivity Meters for ChE 290	$ 2,700.00	$ 2,700.00
		$ 8,760.00
Civil		
Printer for Enviro/Geo Room	$ 820.00	$ 500.00
Allegro Cx Data-Logger	$ 5,595.00	$ 2,767.00
Pressure Calibrator	$ 2,070.00	$ 1,035.00
Class Communication Board	$ 963.65	$ -
Desk Repairs or Replacement	$ 10,199.40	$ -
		$ 4,302.00
Electrical and Computer		
CPH-1333 Energy Conversion Lab Equipment	$ 2,137.68	$ 2,137.68
E&CE Nexus Computer Upgrade	$ 6,000.00	$ 5,000.00
E&CE Nexus Monitor Upgrade	$ 5,175.00	$ 3,375.00
Data Projector	$ 870.00	$ 435.00
Wireless Microphone	$ 380.40	$ -
Upgrades to the ECE 4th Year Lounge	$ 3,000.00	$ 1,710.00
Replacement Toner Cartridge for Laser Printer	$ 129.94	$ -
		$ 12,657.68
Mechanical		
Superficial Hardnss Tester	$ 13,115.52	$ 6,560.00
Limiting Dome Height Formability Tester Upgrades	$ 15,650.00	$ 5,500.00
		$ 12,060.00
Systems Design		
Systems Computer Lab PCs Upgrade	$ 6,000.00	$ 6,000.00
LabVIEW Software License	$ 200.00	$ 200.00
Healthy Aging and Energy Harvesting Design Prototyping	$ 540.00	$ 540.00
		$ 6,740.00
Miscellaneous		
Book	$ 3,000.00	$ 3,000.00
Clickers	$ 6,000.00	$ -
		$ 3,000.00
Sub-Total Department	**$ 104,638.10**	**$ 56,119.33**
Student Groups		
Uwire Autonomous Robot Racing Challenge	$ 3,269.98	$ 1,952.58
2009 UW Formula SAE Team	$ 5,500.00	$ 3,000.00
2009 Great Northern Concrete Toboggan Team	$ 7,900.00	$ 2,150.00
The Iron Warrior	$ 3,000.00	$ 1,130.00
Bringing the Ontario Engineering Competition to Waterloo in 2010	$ 15,000.00	$ -
Funding for Engineering Orientation Week	$ 3,000.00	$ 2,000.00
University of Waterloo Robotics Team	$ 4,188.00	$ 4,188.00
Sustainable Technology Education Project (STEP)	$ 567.67	$ 250.00
UWAFT Spring 2008 Proposal	$ 12,835.00	$ 2,000.00
Spring 2008 Clean Snowmobile Team - Chassis, Engine and Sound Equipment	$ 9,616.50	$ 2,604.00
International Genetically Engineered Machine (Igem) Compeition	$ 3,200.00	$ 400.00
Warg Construction Supplies, Avionic and Communications Equipment and Materials	$ 5,440.00	$ 4,085.00
Liquid Fuel Rocket	$ 1,200.00	$ -
University of Waterloo Nanorobotics Group Proposal	$ 5,589.70	$ 2,000.00
University of Waterloo Underwater Technology Team - Construction of the Neo II	$ 5,112.26	$ 1,600.00
Purchase of Two Coolers for Engineers without Borders	$ 54.80	$ -
2008 Spring Term Wombat Funding Proposal	$ 6,310.00	$ 1,500.00
Sub-total Student Groups	**$ 91,783.91**	**$ 28,859.58**
Total	**$ 196,422.01**	**$ 84,978.91**

Title:

Gis Machine Upgrade

Submitted By:

Name: Michele Laing

E-mail: mlaing@library.uwaterloo.ca

Phone Number: x27620

Team/Department: Architecture - Musagetes Architecture Library

Position: Branch Head

Description of Proposal:

Over the past year student use of GIS data and services has increased tenfold. Access to GIS data and software is only available through the library. The library GIS workstation does not meet the minimum requirements for GIS software. It is slow to load files and it can take hours to make necessary format conversions, monopolizing use of the machine. Some large datasets crash the programme and there is no room on the hard drive to store files.

A faster computer workstation, with adequate storage space and a larger monitor is requested. This new machine will better support the applications currently used by students and will accommodate the expansion into ArcGIS 3D Analyst that coursework will soon require.

Proposal Benefits:

Wait times for serving students would be greatly reduced; possible storage of CAD files for future use; more productive and efficient use of GIS technologies; greater capacity to deal with current and future GIS applications, and the expected increase in student use of GIS technologies. The current machine would be relocated to the School's PC lab for student use.

Almost every grad student employs GIS data in their thesis, as do many undergrad design studios which can total hundreds of students.

Cost Breakdown:

Insert a simple cost breakdown summary (including partial funding options) here.

Item	*Option #1*	*Option #2*
Dell Precision T3400 w/Intel Core2 Quad A6600	$3,500.00	$3,300.00
TOTAL:	$3,500.00	$3,300.00

Implementation Schedule:

A purchase order could be issued once funding is approved. Machine set up by the School's IST staff would happen shortly after receipt. The new workstation would be ready for use by mid-August.

Additional Information:

WEEF partially funded the current GIS workstation. Musagetes Architecture Library receives no funding from UW Library for furnishings, equipment, or other capital expenditures.

Title:

Workshop metalworking tools

Submitted By:

Name: John Debrone

E-mail: jadebron@uwaterloo.ca

Phone Number: 519-888-4567 x27646

Team/Department: Architecture

Position: Workshop supervisor

Description of Proposal:

We are requesting funding for metal working tools to extend our services:

Vari-speed Metal Lathe (General no. 25-365M1) - $5431.86

OPTION A: 15" Meta 1 cutting band saw (General no. 590-1) - $4273.86

OPTION B: 5" x 6" Metal cutting band saw (Geeneral no.90-660-M1) - $397.86

All prices include delivery, installation, taxes.

Proposal Benefits:

The workshop is used intensively by all students, particularly with the development of undergraduate studios focused on material exploration and construction. There has also been a growth of interest in using materials like concrete, plastic, metal, fibreglass, etc. These tools will expand the capabilites of the workshop especially with respect to large-scale construction, carving, and metalwork, which is currently limited to elemental drilling and grinding operations with sheet metal.

Cost Breakdown:

Insert a simple cost breakdown summary (including partial funding options) here.

Item	*Option #1*	*Option #2*
Vari-speed Metal Lathe	$5431.86	$5431.86
15" Meta 1 cutting band saw	$4273.86	$0.00
5" x 6" Metal cutting band saw	$0.00	$397.86
TOTAL:	$9705.72	$5,829.72

Title:

Workshop hand tools

Submitted By:

Name: John Debrone

E-mail: jadebron@uwaterloo.ca

Phone Number: 519-888-4567 x27646

Team/Department: Architecture

Position: Workshop supervisor

Description of Proposal:

We are requesting funding for a combination of hand tools to extend our services:

Set of honing stones (Lee Valley no. 60M03.01) - $50.00

Basic carving set (Lee Valley no.57D13.01) - $77.00

4 1/2" Mallet (Lee Valley no.35E01.02) - $22.50

6" Mallet (Lee Valley no.35E01.03) - $31.00

Brad Point drill bit set (Lee Valley no. 17J01.28) - $185.00

Drywall square (Johnson no. 3TS.48) - $22.34

Inclinometer (Johnson no.40-6060) - $136.28

Laser level and angle locator (Johnson no.40-6065) - $243.71

Rafter Square - (Johnson no. RAS.1) $40.08

Mitre Square - Imperial (Johnson no. 450) - $8.94

Mitre Square - Metric (Johnson no.451) - $8.94

Total - $825.79

Proposal Benefits:

The workshop is used intensively by all students, particularly with the development of undergraduate studios focused on material exploration and construction. There has also been a growth of interest in

using materials like concrete, plastic, metal, fibreglass, etc. These tools will expand the capabilites of the workshop especially with respect to large-scale construction, carving, and metalwork, which is currently limited to elemental drilling and grinding operations with sheet metal.

Cost Breakdown:

Item	*Option #1*	*Option #2*	*Option #3*	*Option #4*
Hand Tools	$825.79	$0.00	$0.00	$0.00

Title:

Chemical Engineering Fourth Year Room

Submitted By:

Name: Hilary Lockie

E-mail: hlockie@engmail.uwaterloo.ca

Phone Number: 888-4567 ex. 38544

Team/Department: Chemical Engineering

Position: Student

Description of Proposal:

Replacement of old CRT monitors in chemical engineering fourth year room with 19" LCD screens

Proposal Benefits:

This proposal would benefit the fourth year chemical engineering students, as well as the second and third year students (since the fourth years will no longer be using computers in the second and third year computer lab).

Additionally, newer monitors would consume less energy. The current monitors are old and many are failing.

Cost Breakdown:

Estimation based on prices from Canada Computers/Best Buy.

Item	*Option #1*
19" LCD Monitors - 22	$4,400.00
TOTAL:	$4,400.00

Implementation Schedule:

Contact has already been made with Dennis Herman (Chem Eng Computer Guy) with respect to ordering and installation. Installation should be completed by the end of the summer.

Additional Information:

The department is currently upgrading all of their computers to 2GB of RAM. Due to this, they are unlikely to fund new monitors, regardless of the condition of the current ones.

Computer statistics for fourth year room (from http://chemeng.uwaterloo.ca/computing/index.html)

6 Pentium 4 - 3.0GHz, 512M RAM

11 Pentium 4 - 1.8GHz, 512M RAM

5 Pentium 4 - 1.6GHz, 256M RAM

Contact Information for funding if different than above:

Name: Dennis Herman

E-mail: dherman@cape.uwaterloo.ca

Phone Number: 888-4567 ex. 32196

Position: "Chemical Engineering Computer Dude"

WATERLOO ENGINEERING ENDOWMENT FOUNDATION FUNDING PROPOSALS: SPRING 2008

Title:

Pressure Regulators For Che 391 Fuel Cell Experiment

Submitted By:

Name: Jennifer Moll
E-mail: jkmoll@engmail.uwaterloo.ca
Phone Number: x36161
Team/Department: Chemical Engineering
Position: Lab Instructor

Description of Proposal:

This proposal is for two heavy-duty, explosion-proof electropneumatic converters for the control of the delivery pressure of a Class 1, Division 1B gas (H2) to two fuel cell demonstration experimental set-ups for the chemical engineering undergraduate lab course ChE391.

Proposal Benefits:

In the current design of the two fuel cell demonstration experiments, the upstream pressure to the fuel cell is manually controlled using the H2 gas cylinder line pressure regulators. Fine control of the delivery pressure is limited and so it is difficult to accurately maintain the inlet pressure to the fuel cell at the required set-point of 1 psig when the outlet flowrates are varied. The electropneumatic converters proposed herein would automatically maintain any pressure setpoint regardless of other parameters varied and therefore would eliminate the need for continuous monitoring and manual adjustment of the delivery pressure. Both fuel cell set-ups already include Labview monitoring software which can readily be adapted to include automated control of the pneumatic converters. In addition, students would be introduced to current technology available for automatic pressure control.

Cost Breakdown:

Insert a simple cost breakdown summary (including partial funding options) here.

Item	*Option #1*	*Option #2*	*Option #3*	*Option #4*
Electropneumatic converter	$830.00	$830.00	$0.00	$0.00
Electropneumatic converter	$830.00	$0.00	$0.00	$0.00
	$0.00	$0.00	$0.00	$0.00
	$0.00	$0.00	$0.00	$0.00
	$0.00	$0.00	$0.00	$0.00
	$0.00	$0.00	$0.00	$0.00
TOTAL:	$1,660.00	$ 830.00	$ 0.00	$ 0.00

Implementation Schedule:

Would be installed asap for ChE391 labs in F08 term

Title:

Upgrade Ph And Conductivity Meter For Che 290

Submitted By:

Name: Lillian Liao

E-mail: lliao@cape.uwaterloo.ca

Phone Number: X36161

Team/Department: Chemical Engineering

Position: Laboratory Instructor

Description of Proposal:

To replace and upgrade laboratory equipment that is outdated.

Proposal Benefits:

Access to this equipment would permit more accurate chemical determinations and improve success rate of experiments. It would also improve exposure to basic laboratory equipment. Approximately 130 students of ChE290 would greatly benefit from this upgrade.

Cost Breakdown:

Insert a simple cost breakdown summary (including partial funding options) here.

Item	*Option #1*
1 - Orion pH meter	$1,200.00
1 - Orion conductivity meter	$1,500.00
TOTAL:	$2,700.00

Implementation Schedule:

Equipment would be used once available (Fall 08).

Additional Information:

Conductivity is the measurement of the electrolytes in a solution. PH is the measure of the acidity or basicity of a liquid. Partial funding option would be to purchase just one of the instruments. All prices are current.

Title:

Printer for Enviro/Geo Room.

Submitted By:

Name: Anna Lafoyiannis

E-mail: amlafoyi@engmail.uwaterloo.ca

Phone Number: 519-502-1825

Team/Department: Department of Civil and Environmental Engineering

Position: Student

Description of Proposal:

The environmental/geological fourth year study room would be greatly improved if there was a printer. It's in a dark basement of E3 with no close printer in sight. I am proposing the addition of a printer to the room and paper for the students to use. The purchase of a corkboard is also requested so that class reps can post information to the class. This is important as there are many electives in fourth year and members of the class are frequently not in the same place at the same time (making announcements difficult)

Proposal Benefits:

This will directly benefit about 50 students per semester. It will make the study room alot more useful, since now many fourth year students use the Civil lab to do homework because it has a printer. This increases the demand on the computers in the Civil computer lab, which is used by over 200 students per semester.

Cost Breakdown:

Option 1 would provide for the ideal printer. Cheaper printers could be purchased and those options are shown in 2 and 3

Item	*Option #1*	*Option #2*	*Option #3*
Laserjet Printer with Duplex	$600.00	$500.00	$400.00
Paper	$100.00	$50.00	$0.00
Ink	$100.00	$100.00	$0.00
Cork Board	$20.00	$0.00	$20.00
TOTAL:	$ 820.00	$ 650.00	$ 400.00

Implementation Schedule:

The ideal printer would be: HP LaserJet P2015x (CB369A) Monochrome Laser Printer - Automatic Duplex Ethernet 1200x1200 dpi Up To 27 ppm 500 Sheets Capacity 32MB USB. To implement this, the class reps will purchase the printer ASAP and coordinate with CHIP to have the driver installed onto the computers.

Title:

Allegro Cx Data-Logger

Submitted By:

Name: Terry Ridgway

E-mail: tridgway@uwaterloo.ca

Phone Number: 519 888-4567 ext. 33042

Team/Department: Civil and Environmental Engineering

Position: Lab Technologist

Description of Proposal:

Data-logger complete with survey software to be used with the Department's Total Station and Digital Level. It will allow the user to interface with the survey instrument and output the survey in DXF or TXT format .

Proposal Benefits:

The Data-logger will be used to assist in the course layout for the survey courses CE 125 and ENV 100 offered in the fall as well as any 400 field projects or similar lab projects requiring surveying.

Cost Breakdown:

The Department of Civil and Environmental Egineering will cover 50% of the cost

Item	*Option #1*
Allegro CX ---WEEF portion (50%)	$2,250.00 → 2700
----DEPT. portion (50%)	$2,250.00
Carlson SurvCE TS--- WEEF (50%)	$547.50
---DEPT. (50%)	$547.50
Taxes are extra	$0.00
	$0.00
TOTAL:	~~$5,595.00~~

Implementation Schedule:

Fall 2008 or sooner depending on Projects

Additional Information:

The Department currently borrows Prof. Annable Data-logger to use when it is available. Having our own will allow more flexibility in scheduling Undergraduate field work. This would also allow 2 groups access to equipment by having our own and borrowing Prof. Annable's Data-logger

Contact Information for funding if different than above:

Name: Bonnie Neglia

E-mail: bneglia@uwaterloo.ca

Phone Number: 33681

Position: Admin Assistant

Title:

Pressure Calibrator

Submitted By:

Name: Terry Ridgway

E-mail: tridgway@uwaterloo.ca

Phone Number: 519 888-4567 ext. 33042

Team/Department: Civil and Environmental Engineering

Position: Lab Technologist

Description of Proposal:

To replace a 20 year old defective digital calibrator used in calibrating pressure transducers on undergraduate labs.

Proposal Benefits:

The calibrator is used to calibrate the transducers used in undergraduate fluid mechanics labs CE 280 and ENV 214. It will also be used to verify calibration on various pressure transducer used in field projects

Cost Breakdown:

IThe Department of Civil and Environmental Egineering will cover 50% of the cost

Item	*Option #1*
Meri-cal DP 2000I--- WEEF	$1,035.00
--- Depart	$1,035.00
TOTAL:	$2,070.00

$1000

Implementation Schedule:

Immediately

Contact Information for funding if different than above:

Name: Bonnie Neglia

E-mail: bneglia@uwaterloo.ca

Phone Number: 33681

Position: Admin Assistant

Title:

Class Communication Board

Submitted By:

Name: Esteban Campion and Cailey McCutcheon

E-mail: esteban.campion@gmail.com, c3mccutc@uwaterloo.ca

Phone Number: 519-884-6085,519-504-3342

Team/Department: Civil Class of 2011

Position: WEEF Representatives

Description of Proposal:

To encourage particiapation in engineering events, scheduling exams and special tutorials a class communication board would be benificial to our class. This board would be a whiteboard with a cover to provent tampering and would be be posted in the Civil Lecture room, CPH 3385.

Proposal Benefits:

Much of the class remains uninformed about class events and peer study groups. We believe that a communications board would improve the attendance of class events and further encourage class envolvement.

Cost Breakdown:

Insert a simple cost breakdown summary (including partial funding options) here.

Item	*Option #1*	*Option #2*	*Option #3*
6' wide x 4' enclosed dry erase board	$935.00	$0.00	$0.00
4' x 8' Two Month dry erase calendar	$0.00	$640.00	$0.00
4' x 6' dry erase board	$0.00	$0.00	$419.00
Complete Dry Erase Marker Kit	$28.65	$28.60	$28.65
	$0.00	$0.00	$0.00
	$0.00	$0.00	$0.00
TOTAL:	$ 963.65	$ 668.60	$ 447.65

Implementation Schedule:

It is suggested that this be implemented before January 2009, when the Civil class of 2011 returns.

Additional Information:

This information was taken from www.mywhiteboards.com

Title:

Desk Repairs Or Replacement

- Alert the department

Submitted By:

Name: Esteban Campion and Cailey McCutcheon

E-mail: esteban.campion@gmail.com, c3mccutc@uwaterloo.ca

Phone Number: 519-884-6085,519-504-3342

Team/Department: Civil Class of 2011

Position: WEEF Representatives

Description of Proposal:

The desks currently in CPH 3385, the designated Civil Lecture room, have sharp rails underneath the table tops which continuously scratch and hurt the students. We are proposing that the desks be replaced or repaired.

Proposal Benefits:

By removing the sharp rails from the desks, students will be able to learn without injury or destraction from the lecturer. The vast majority of the class agreed that this would imporve their learning environment.

Cost Breakdown:

Insert a simple cost breakdown summary (including partial funding options) here.

Item	*Option #1*	*Option #2*	*Option #3*
Repair quote (rough estimate)	$450.00	$0.00	$0.00
Approximately 60 new tables	$0.00	$10,199.40	$8,999.40
TOTAL:	$ 450.00	$10,199.40	$8,999.40

Implementation Schedule:

It is suggested that this be implemented as soon as possible.

Additional Information:

New desk information taken from www.atwork.ca

Title: CPH-1333 Energy Conversion Lab Equipment

Submitted By:

Thursday, 03 July 2008

Name: Ed Spike

E-mail: spike@engmail.uwaterloo.ca

Phone Number: x33716, x33815

Position: Laboratory Instructor

Description of Proposal:

The proposal is to purchase one Large Cabinet, for 6+3 modules, Model 8134-20, to house the one subset of modules: Consisting of the Digital Acquisition Interface module (the heart of the measurement system), the Power Supply module, and the three-phase transformer module.

Purchasing of three replacement transformers will allow the laboratory to have the present complement of transformer modules.

Adding one more **Three-Phase Transformer, module model 8348-00**, will help with two experiments.

Proposal Benefits:

The Large Cabinet, Model 8134-20 is required to house and to use One Power Supply and one Data Acquisition module on order.

Three Replacement Transformers Model 23994-00, are required to replace the three that were burned out. Fuses are now being added to prevent this damage.

Adding one Three-Phase Transformer, module model 8348-00, will help with two experiments.

History and Benefits

In April 2007 seven workstation sets ($43K each) were received. The seven workstations with two students per station per session only allow for 14 students per session. The courses in S07, F07, W08 and S08, had scheduled session over 8 or 9 days; with labs running for 3hr sessions between 8:30am to 7:30pm. Saturday labs if snow days.

Fewer lab sessions will allow the labs to be in sync with the lectures. There will be a cohesive structure for the lab material information flow for the students. The staff will not have to work overtime or after hours. The students will have lab sessions between 8:30am and 4:30pm (no night or week end labs).

The plan is to have 22 workstations with most of the modules. This will allow for damage modules to be easily replaced during a lab session. Lab Staff can use a station to train on while another course is using the lab. Accommodation of schedule changes for co-op interviews, illness and other personal matters can be made.

Presently accommodation has been difficult for the staff to supervise in the laboratory. The safety concerns are very high due to the high voltages and high currents being used. So Staff supervision even with the TAs is a requirement. Some make up labs were scheduled from 5:30pm to 8:30pm because of co-op interviews.

In the table below, the number of sessions for each course and class size is presented with the number of sessions required for 7, and 20 workstation set ups.

Additional upgrades to accommodate the new equipment cost about $200 per workstation not including ten hours of staff time per workstation.

The students will be able to work efficiently in several courses. Keeping the number of sessions per experiment to 3 is the goal. Conflicts with other labs in ME, MTE and ECE have required the scheduling of night sessions over the past year.

By May 2008 there will be eight more partial workstations purchased.

This proposal will allow for **one additional subset** to be completed also for May 2008.

Fourth year design course (ece.492; me.482; mte.420) cannot be considered for accommodation with the staff and facilities being overbooked.

The number of sessions per experiment are shown in the 3 right hand columns.

Course	Term	Number of students in class	Session using 7 workstations	Sessions using 15 workstations	Sessions using 20 workstations
me.269	F08	104	8 (7.40)	4 (3.47)	3 (2.60)
me.269	W08	100	8 (7.15)	3 (2.25)	3 (2.25)
ece.261	S07	119	9 (8.50)	4 (3.97)	3 (2.98)
ece.261	F07	114	9 (8.15)	4 (3.80)	3 (2.85)
mte.320	S07	118	9 (8.43)	4 (3.93)	3 (2.95)
ece.362	W09/S08	120	9 (8.57)	4	3
TYPICAL for above 4	TYPICAL	120 CAP	9 (8.57)	4 (1 or 2 WEEK)	3 (ONE WEEK)

mte.420	F07	28 CAP	2	2 MODULE LIMITED	2 MODULE LIMITED
ece.463	S07	28 CAP	2	2 MODULE LIMITED	2 MODULE LIMITED
TYPICAL for above 2	TYPICAL	Cap can be increased	2 Cap at 28	2 Cap at 28	2 Cap at 28

Cost Breakdown:

WEEF budget requested for one additional subset and 3 replacement transformers

Qty of 1Large Cabinet for 6+3 modules Model 8134-20	$ 1053.00	Primary
Qty of 3 Replacement Transformers Model 23994-00	$ 336.30	Secondary
Qty of 1Three-Phase Transformer module model 8348-00	$ 547.00	Tertiary
	=========	
Sub Total	$ 1936.30	
TAX @ 10.4%	$ 201.38	

TOTAL $ 2137.68

Implementation Schedule: 01 September 2008.

Additional Information:

Quotes attached.

Undergraduate budget funds for MME and ECE are funding more computers and monitors.

Alternate Contact Information for Funding if different than above:

Name: Roger Sanderson: if Edward Spike is not available.

E-mail: rsanders@engmail.uwaterloo.ca Phone Number: (519) 888-4567 x36184

Position: Laboratory Instructor/Assistant Lab Director ECE.

Laboratory pictures

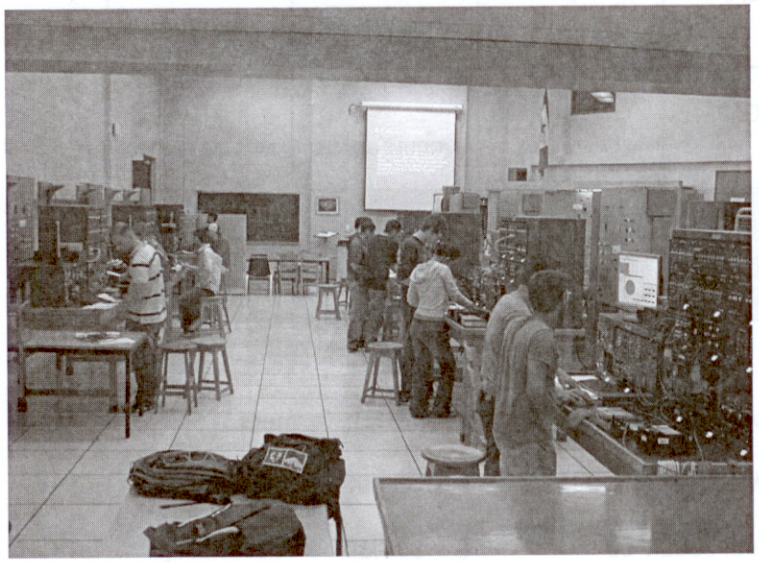

Figure 1 Seven workstations

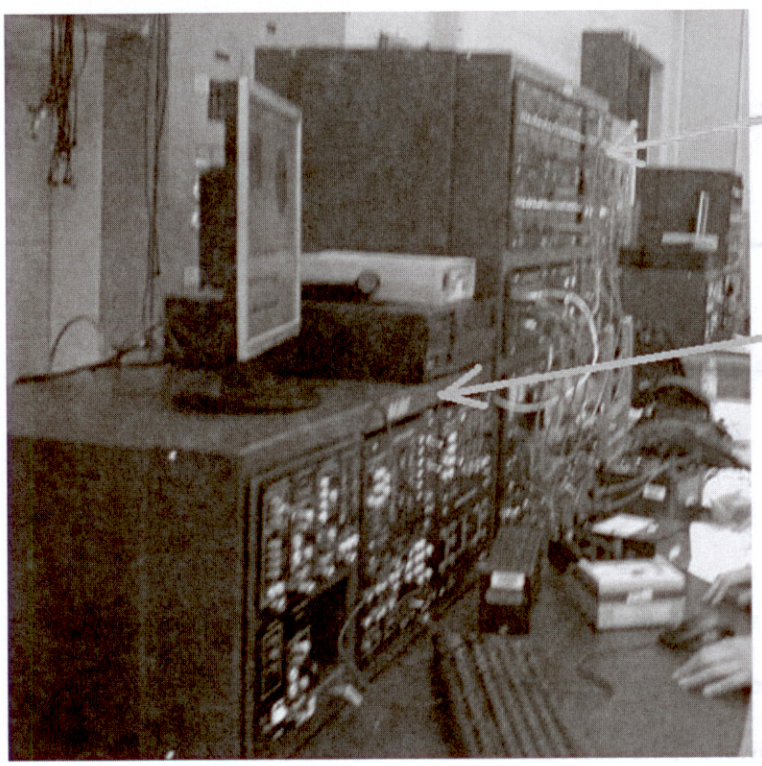

Figure 2 Large and Small cabinet with modules used in one experiment.

Title: E&CE Nexus Computer Upgrade

Submitted Summer 2008 By:

Your Name: Eric Praetzel

E-mail: praetzel@engmail.uwaterloo.ca

Phone Number: ext. 35249

Department: Electrical and Computer Engineering

Position: Laboratory Staff, Hardware Specialist, ECE Nexus manager

Description of Proposal:

I propose to replace the, 3 year old Pentium 4, computers in E2-2364 and the ECE Public Room, 7 year old Pentium 3 computers, with new AMD computers to address performance and comfort issues.

Proposal Benefits:

This benefits ECE core courses: 222, 324, 325, 327, 355, Mechatonics using the E2-2364 lab and any students using the Pentium 3 computers in the ECE public rooms (E2-2360, E2-2362). Compile times for the Quartus software (used in the core courses SE 141, ECE 223, ECE and ME 324/325, ECE 327) are 2x faster (2 minutes vs 1 minute) on AMD processors than the Pentium 3 computers and up to 50% faster than the Pentium 4.

The Pentium 4 (or Intel Core 2 Duo) computers consume 2 to 2.5x the power of a 2.4GHz AMD computer and generate 2x as much heat (40W vs 110W). As more Pentium 4 computers have been added to the E2-2364 room, it has been growing hotter. Computer systems are responsible for 1/3 of the total heat generated within an ECE laboratory and so replacing P4's is an easy way to reduce room heating by 15%, and electricity use by 30% while saving the university money.

The Pentium 4 computers would move into the E2-2356 (used by SE141, ECE 223, replacing P3 computers). Displaced Pentium 3 computers would then move into E2-3344 (ECE 241 & 318, first year SE and NE labs, replacing Pentium 2 computers), E2-3339 (Fourth Year design Projects) and CPH-3371 (robotics) to replace older Pentium I and 2 computers.

The Pentium 3 and 4 computers also have 512M of RAM and Windows now needs >512M to be responsive when Quartus (ECE 223 & 324 & ECE 327, SE 141, ME 325) and other RAM hungry, lab software is used.

In the future, when we're forced onto Windows Vista we'll need 2G of ram.

Cost Breakdown:

2.4GHz Single Core AMD Computers with 2G RAM: $400 ea

Total – any amount up to $6,000 (15 computer systems)

Implementation Schedule:

August 2008

Additional Information:

In Summer 2007 WEEF provided funding for 29 LCDs and 9 AMD computers for E2-2364.

In Winter 2008 WEEF provided funding for 17 AMD computers for E2-2364.

Our public computer rooms (E2-2360, 2362) have 10 Pentium 3 and 10 Pentium 4 computers.

Priority:

Moderate (would be nice – but life can go on without this)

Title: E&CE Nexus Monitor Upgrade

Submitted Summer 2008 By:

Your Name: Eric Praetzel

E-mail: praetzel@engmail.uwaterloo.ca

Phone Number: ext. 35249

Department: Electrical and Computer Engineering

Position: Laboratory Staff, Hardware Specialist, ECE Nexus Manager

Description of Proposal:

I propose to replace 1998 vintage 17" monitors with 17" LCDs in E2-2363.

Proposal Benefits:

This benefits ECE 222, 324, 325, 327 using the E2-2363 lab. This is one of our most heavily used "computer" labs (low level (assembly) and C programming).

The 17" monitors would trickle down to replace 19" monitors in E2-3344/3346 (50 stations) which no longer power down when the computer is off. Each such upgrade would save about $35/year in electricity.

Some heat reduction would result as 17" LCDs consume 33W while the existing monitors are 78W – representing a 30% reduction of the heat generated by our typical computer system.

Cost Breakdown:

17" LCD Monitors: $225 ea

Total – any amount up to $5,175 (23 computer systems)

Implementation Schedule:

July 2008

Additional Information:

In Fall 2008 I may apply for additional funds as our goal is to upgrade all of a room with identical equipment.

The current monitors are starting to fail (focus problems, high pitched whistling, failing power-saving circuitry, communications failures with Windows XP resulting in impossibly high refresh frequencies).

Due to computer expansion (WEEF purchased 69 used computers in W2007, 9 new ones in S2007) ECE now has labs which need monitors and there are many 14" and 15" models to replace (we have never surplussed a working 14" monitor or larger). Monitors are also needed for computers in the 4th year study room and to replace about 8 monitors which Science surplused (for free) to ECE.

Priority:

Moderate (would be nice – but life can go on without this upgrade)

Title:

Data Projector

Submitted By:

Name: Carmen Caradima

E-mail: cmcaradi@uwaterloo.ca

Phone Number: (519) 888-4567 ext. 33003

Team/Department: Electrical and Computer Engineering

Position: Lab Instructor

Description of Proposal:

Data projector to be used for lab instruction.

Proposal Benefits:

It is intended that the data projector not be installed in a fixed position. This will allow for flexible use of the equipment in various labs.

Students benefitting from this proposal - currently cca. 500-565 per year. The break-down is as follows:

Fall term ECE 380 Laboratory Average enrolment: 95 ECE students

Fall term MTE220 Laboratory Average enrolment: 105 MTE students

Fall term ECE 484 Laboratory Average enrollment: 105 MTE students

Winter term ECE 380 Laboratory Average enrolment: 160 ECE students

Winter term ECE 484 Laboratory Average enrolment: 40 - 100 mix of ECE, ME & SyDe students

Cost Breakdown:

Partial funding options shown below are as follows:

Option #1: full funding by WEEF

Option #2: 50 - 50 funding by WEEF and ECE

Item	*Option #1*	*Option #2*
Optoma EP719 data projector	$793.00	$396.50
Estimated shipping	$20.00	$10.00
Tax	$57.00	$28.50
TOTAL:	$ 870.00	$ 435.00

Implementation Schedule:

The data projector is intended for use starting Fall 08 term.

Title:

Wireless Microphone

Submitted By:

Name: Carmen Caradima

E-mail: cmcaradi@uwaterloo.ca

Phone Number: (519) 888-4567 ext. 33003

Team/Department: Electrical and Computer Engineering

Position: Lab Instructor

Description of Proposal:

The proposed wireless microphone would enhance presentation audition for all students taking labs with soft spoken lab instructors.

Proposal Benefits:

Students' comments (source: ECE Online Survey):

- W08 ECE380: "She could be louder or use a mic when giving out instructions at beginning of lab."

- F07 MTE220: "Speaks a bit too quiet."

- F07 MTE220: "The only issue I had with her was her very soft voice, which made it difficult for her to be heard over the noise of the class."

- W08 ECE 380: "I found it difficult to hear her voice. Perhaps the use of a microphone would help."

Students benefitting from this proposal - virtually all students taking Carmen's labs (cca. 400-460 per year). The break-down is as follows:

Fall term ECE 380 Laboratory Average enrolment: 95

Fall term MTE220 Laboratory Average enrolment: 105

Winter term ECE 380 Laboratory Average enrolment: 160

Winter term ECE 484 Laboratory Average enrolment: 40 - 100

Cost Breakdown:

Partial funding options shown below are as follows:

Option #1: full funding by WEEF

Option #2: 50 - 50 funding by WEEF and ECE

Item	*Option #1*	*Option #2*
Audio-Technica Wireless BodyPack Microphone	$295.80	$147.90
Estimated shipping and customs	$50.00	$25.00
Tax	$34.60	$17.30
TOTAL:	$ 380.40	$ 190.20

Implementation Schedule:

Wireless microphone system to be purchased before the start of the Fall 08 term.

Title:

Upgrades To The ECE 4th Year Lounge

Submitted By:

Name: Nicholas Hayduk

E-mail: nicholashayduk@sasktel.net

Phone Number: 519-897-3939

Team/Department: ECE

Position: Student

Description of Proposal:

The University of Waterloo has one of the best ECE departments in the country, and yet its students are still forced to used ball mice that don't really work and old CRT monitors that don't have stands in their 4th year lounge. This proposal asks for funds to upgrade the three computers in the lounge.

Proposal Benefits:

The benefits to the undergrads in the ECE department are obvious.... we won't have to use very terrible computers in our lounge. This would benefit the over 200 current 4th year ECE students as well as students in lower years since they will also eventually get to use them when they are in 4th year. However there is also a benefit for students not in ECE: since the 4th years will actually want to use the computers in the 4th year lounge, this will free up computers in the others labs that everyone can use.

Cost Breakdown:

Insert a simple cost breakdown summary (including partial funding options) here.

Item	*Option #1*
New computer with keyboard, mouse and LCD monitor	$1,000.00
New computer with keyboard, mouse and LCD monitor	$1,000.00
New computer with keyboard, mouse and LCD monitor	$1,000.00
TOTAL:	$3,000.00

Implementation Schedule:

Since I am only here until the end of Winter 2009, as soon as I get approval I will begin the process of purchasing the equipment. I will make that the purchase in done in the proper way so that the computers can be put on the Nexus network.

Additional Information:

The cost breakdown above is based on purchasing a computer from Future Shop. Since the computers will need to be on the Nexus network, I'm guessing there is a particular way to go about purchasing new computers through the school which might offer bigger discounts.

Title:

Replacement Toner Cartridge For Laser Printer In Software Engineering Computer Lab (Dc2577)

Submitted By:

Name: Tyler Szabo
E-mail: tszabo@uwaterloo.ca
Phone Number: 519-208-8418
Team/Department: Software Engineering Students
Position: Student

Description of Proposal:

The Software Engineering Lab (DC2577) contains a shared laser printer that is currently out of toner. The printer was purchased by a previous SE class so that printing may be done quickly and conveniently for those working in the lab.

Proposal Benefits:

The printer is available to Software Engineering students, and it is very convenient for printing close-by, especially when the library is closed.

Cost Breakdown:

Item	Option #1	Option #2	Option #3	Option #4
Toner Cartridge	$114.99	$0.00	$0.00	$0.00
+Tax	$14.95	$0.00	$0.00	$0.00
	0.00	$0.00	$0.00	$0.00
	$0.00	$0.00	$0.00	$0.00
	$0.00	$0.00	$0.00	$0.00
	$0.00	$0.00	$0.00	$0.00
TOTAL:	$ 129.94	$ 0.00	$ 0.00	$ 0.00

Implementation Schedule:

New toner will be purchased and installed immediately upon confirmation of funding.

Additional Information:

The printer will receive a partially funded by WEEF sticker.

Contact Information for funding if different than above:

Name: Insert Name Here
E-mail: Insert E-Mail Here
Phone Number: Insert Phone Number Here
Position: Insert Position Here

Title:

Superficial Hardness Tester.

Submitted By:

Name: Professor David Weckman

E-mail: dweckman@uwaterloo.ca

Phone Number: UW Ext. 32861

Team/Department: Department of Mechanical & Mechatronics Engineering

Position: Professor

Description of Proposal:

This proposal is for funding for purchasing a new United Tru-Blue II Computerized Hardness tester for use in a wide range of materials engineering undergraduate courses. The existing superficial hardness tester, located in the Undergraduate Materials lab in E3-2119, is over 40 years old and was irreparably damaged by a student last term and is no longer functional. It was the only hardness tester in the Materials Lab capable of measuring the Rockwell B hardness of softer metals such as aluminum copper, brass, etc. and is an essential materials characterization test apparatus in any undergraduate materials lab. This damaged hardness tester must be replaced with a modern, functioning hardness tester.

Proposal Benefits:

The proposed new Computerized Hardness Tester will make it possible again to do Rockwell B hardness testing of softer materials such as aluminums and coppers. The tester will provide hands-on exposure of our undergraduate students to the most modern materials characterization test equipment. It has far more capabilities than the 40 year old test; it is capable of performing most types of regular hardness test scales and most superficial test scales. The computerized display provides conversion of test results to any other hardness scale and tensile strength.

The new hardness tester would be used by 800 to 1000 undergraduate students per year in the Civil, Mechanical & Mechatronics and Management Engineering programs in all material labs and projects in undergraduate materials related courses as well as student team projects. Courses in which the Superficial Hardness Tester is currently used include, for example, CIVE 265, MTE 111, ME 135 (ManEng), ME 215, 230, 322, 435, etc.

Cost Breakdown:

Insert a simple cost breakdown summary (including partial funding options) here.

Item	Option #1
United TRU-BLUE II Computerized Hardness Tester	$11,822.00
GST/PST & Shipping	$1293.52
TOTAL:	$13,115.52

Implementation Schedule:

The hardness can be purchased and installed by United Testing Systems Canada, Concord, ON within one month of funding approval.

Additional Information:

Full funding to replace this irreparable equipment is requested; however, the Department of Mechanical & Mechatronics Engineering will contribute up to $6,560.00 (1/2 of total cost) from money donated by Mechanical Engineering alumni.

Title:

Limiting Dome Height Formability Tester Upgrades

Submitted By:

Name: Professor Mary Wells
E-mail: mawells@mme.uwaterloo.ca
Phone Number: UW Ext. 38356
Team/Department: Department of Mechanical & Mechatronics Engineering
Position: Associate Professor

Description of Proposal:

This proposal is for funding for purchasing components required for upgrading the control and data acquisition systems for a Limiting Dome Height (LDH) formability tester for use in ME 340 Manufacturing Processes labs and a number of other materials engineering undergraduate & graduate courses and various research projects. The existing MTS LDH tester, located in the Manufacturing lab in E3-2137, was donated by Dofasco, Hamilton, ON with an obsolete and unservicable controller. To make this equipment functional for ME 340 undergraduate labs we require, CSA upgrades & approval, a new hydraulic controller, a load cell, a computer, CCD camera and monitor, data acuisition & control cards and Labview software.

Proposal Benefits:

The proposed upgrades to the controllers and data acquisition systems for the donated MTS limiting dome height tester will make it possible to incorporate this industrially relevant sheet metal formability test into ME 340 Manufacturing Processes labs. It will provide hands-on exposure of our undergraduate students to modern manufacturing processes and materials characterization test equipment.

The upgraded LDH tester would be used by at least 160-180 undergraduate students per year in the Mechanical & Mechatronics Department in their ME 340 Manufacturing processes course. It will also be used in training of graduate students in the use of this important materials & manufacturing test technique.

Cost Breakdown:

Insert a simple cost breakdown summary (including partial funding options) here.

Item	*Option #1*	*Option #2*	*Option #3*	*Option #4*
Trans Tech Load Washer 125 kip	$650.00	$650.00	$650.00	$0.00
2nd MTS 407 servo controller	$12,000.00	$12,000.00	$0.00	$0.00
CCD/CMOS camera & monitor	$1,500.00	$0.00	$0.00	$0.00
Machine Shop Charges for various brackets	$1,000.00	$300.00	$0.00	$0.00
Data Acquisition Card	$500.00	$500.00	$500.00	$0.00
	$0.00	$0.00	$0.00	$0.00
TOTAL:	$15,650.00	$13,450.00	$1,150.00	$ 0.00

Implementation Schedule:

The components can be purchased and installed within one month of funding approval. Labview software development will take a few months longer.

Additional Information:

Full funding for these equipment upgrades is requested; however, the Department of Mechanical & Mechatronics Engineering will contribute up to 1/3 of the total cost including $1000.00 for CSA upgrades and approval required for all U/G equipment and Professors Wells, Weckman, Sullivan & Zhou will

contribute up to 1/3 of the total cost in support of their various research projects. Please note that Professor Weckman will also contribute a computer ($1000) for the data acquisition and control system and that Professor Worswick has already contributed the 1st of 2 required MTS 407 hydraulic servo controllers valued at $12,000.

Contact Information for funding if different than above:

Name: Insert Name Here
E-mail: Insert E-Mail Here
Phone Number: Insert Phone Number Here
Position: Insert Position Here

Systems Computer Lab PC's Upgrade

Submitted By:

Department Systems Design Engineering

Name Tariq Naqvi

Email tnaqvi@engmail.uwaterloo.ca

Tel Ext.35218

Position Lab Instructor

Description of Proposal:

The undergraduate systems computer lab (DASL) requires a major hardware upgrade. The current computer lab contains 16 computers that need to be VISTA compatible. New machines are needed in order to keep pace with the requirements of the students using the labs. The lab is heavily used by 1st to 4th year systems and other engineering students. We are proposing to upgrade the computers to something capable of running windows VISTA and high power digital design software. This is a continuation proposal from last term as WEEF gave us 10K toward this upgrade already. We are asking WEEF to fund the remaining funds needed to upgrade all 16 PC's.

Proposal Benefits:

- New PC's will allow us to run up-to-date software and facilitate faster computer response.

Cost Breakdown:

Description	Remaining Qty	Unit Cost	Total Cost
Desktop PC	6	$1000	$6000
TOTAL		**$6000**	

Implementation Schedule: Immediate

LabVIEW Software License

Submitted By:

Name Tariq Naqvi

Email tnaqvi@engmail.uwaterloo.ca

Tel. Ext.35218

Position Lab Instructor

Description of Proposal:

This proposal is for LabVIEW new release Software License for Teaching Lab PC's

Proposal Benefits:

Due to our recent acquire of FPGA boards in the Teaching Lab, we need to upgrade our LabVIEW Software. This software is necessary to support our newly acquired FPGA boards.

Cost Breakdown:

Description	Quantity	Unit Cost	Total Cost
LabVIEW Software License	1	$200	$200

Implementation Schedule:

Immediate

Healthy Aging and Energy Harvesting Design Prototyping (for SYDE361)

Submitted By:

Name: Albert Chen and Cat Hay
E-mail: ichen@engmail.uwaterloo.ca, c2hay@engmail.uwaterloo.ca
Position: 3A Systems Design Class Reps

Description of Proposal:

As part of the requirements of the 3A Systems Design Course, "Introduction to Design", nine groups are designing and building prototypes related to healthy aging and energy-harvesting projects. These prototypes will be demonstrated to the university and outside community at a symposium in the DC fishbowl on Wednesday July 23, 2008.

This year's projects include:

- self-cooling water bottle for hikers
- exercise equipment that generates power
- power generation from rain water
- toothbrush redesign to improve efficiency
- refrigerator cooled using outdoor air
- bathroom floors heated by grey water
- energy harvesting from traffic through tunnels
- Bluetooth tracker for families of patients with memory loss or dementia
- Rear-collision protection for cars driven by senior citizens

On average, prototypes for each group will cost more than $250, resulting in an overall class cost of $2250. We are requesting 25% of this amount **($540)** to be sponsored by WEEF. The department of Systems Design Engineering has agreed to match WEEF funding to cover an additional 25% of project costs. All remaining costs will be covered by the students in each group. Each group will be required to submit receipts upon completion of the project.

Proposal Benefits:

The $540 sponsored by WEEF will benefit 52 students currently enrolled in SYDE361. These students will gain hands on experience of prototyping designs, and will have the opportunity to be creative in their solutions without a significant monetary barrier. Many of the projects if not all are open ended and the resulting designs/equipment will remain with the department for future year students to use. This money will also serve to enhance the reputation of UW Engineering as these prototypes will be demonstrated at a symposium to the general public.

Cost Breakdown:

We have requested $540 from WEEF. This budget will be distributed evenly among the student groups ($60/group) after receipts for project costs have been provided. This $540 sponsorship will be matched by the Department of Systems Design Engineering, amounting to a total budget of $1080/group, shared across the five or six students in each group.

Implementation Schedule:

SYDE361 students will request reimbursement from the department of Systems Design Engineering for their prototyping costs on or after July 23, 2008. Provided that proper documentation and receipts are made available, the department will be reimbursed by WEEF for a maximum value of $540.

Additional Information:

From the course description:

"The methodology of design; defects, needs and the problem definition; criteria and generation of alternative solutions; feasibility analysis; optimization; selection, implementation and solution.

Each group will choose a unique topic related to one of the two themes. The two themes are: (1) energy harvesting for mobility, living and communication; and (2) healthy aging. The two topics are timely given the world's pre-occupation with energy needs and an aging demographic.

A need analysis will be performed. Subsequently, specifications will be developed. Various concepts will be generated and evaluated (preliminary design) and a concept will be chosen. It is mandatory for each group to consult with at least one person who is currently living with the condition chosen. This is to assist in a better understanding about the condition, its problems and to assist in determining the needs and testing the concepts. Since design is iterative, the groups are allowed to redo some of the steps as needed. In order to engage in concept testing, the groups will require building a prototype to demonstrate function and to also provide a computer model that demonstrates form."

Title:

Uwire Autonomous Robot Racing Challenge

Submitted By:

Name: Ammar Alzaydi

E-mail: aalzaydi@engmail.uwaterloo.ca

Phone Number: 519-998-0996

Team/Department: UWIRE / Mechatronics Engineering Dep.

Position: Mechatronics Engineering

Description of Proposal:

A new robotics initiative (UWIRE - UW Intelligents Robotics Experiments), founded by five (5) MTE students, is in the process of being established at the university. UWIRE currently has nine (9) active members and is actively seeking out projects, funding, members and sponsorships. The purpose of UWIRE is to give its students a means to share and realise their ideas. Most student groups at UW focus on one large project, UWIRE intends to allow as many concurrent projects as it can financially support. To jumpstart this initiative, UWIRE has entered the Autonomous Robot Racing Challenge 2009, being held at UW next year. UWIRE won the first prize in the challenge held in 2006.

Proposal Benefits:

Short Term: The Autonomous Robot Racing Challenge 2009 will provide UWIRE members with useful hands-on exposure to basic/intermediate level autonomous robotics. Members will be required to apply in practice many of the concepts covered in theory in their core courses.

Long Term: This project will serve as a springboard into larger, more complicated projects. It will give UWIRE the initial exposure and experience required to attract corporate sponsorships and alternate sources of funding necessary to realise future tasks.

Cost Breakdown:

Insert a simple cost breakdown summary (including partial funding options) here.

Item	*Option #1*	*Option #2*	*Option #3*	*Option #4*
Robot Controllers And Microcontrollers	$916.78	$916.78	$916.78	$778.29
Motor Controllers (Brushed)	$212.14	$212.14	$212.14	$194.99
Advanced Sensors and Detection Modules	$414.14	$414.14	$414.14	$414.14

Radio Development Kits and Radio Systems	$352.53	$352.53	$352.53	$268.33
Visiual Indicators and Other Elec. Parts	$56.99	$00.00	$56.99	$29.46
Hokuyo PBS-03JN Scanning Infrared LED Obstacle Det	$1374.39	$1,374.39	$0.00	$0.00
TOTAL:	$3,326.97	$3,269.98	$1,952.58	$1,685.21

Implementation Schedule:

Robot must be ready before the end of April of 2009.

Additional Information:

Most of the electronics purchases will be shared with other robotics research at UW and in competitions following the Robot Racing Challenge in 2009. All the pricess above does not include TAXES.

WEEF Proposal for Spring Term, 2008

2009 UW Formula SAE Team

Submitted By:

Name: Mihail Iolov

E-mail: uwfsae@gmail.ca

Phone Number: x35904

Position: Anti-roll Designer

2009 Formula SAE

- 30 Undergrad Engineering Students
- 7 major design groups including Chassis and Powertrain Development
- Largest International Collegiate Engineering Design Competition
- Multiple Discipline Participation
- Participation from both streams
- First to fourth year students (approx. 20 first year students)
- Alumni mentoring

WEEF

Support for Formula SAE provides an excellent public/corporate awareness tool for WEEF. UW FSAE is a consistent Top 10 finishing team, competing with 140 other teams from around the world. Our competition is sponsored by 'The Big Three' (Daimler-Chrysler, Ford, GM) and attracts numerous engineering and technology companies. Furthermore the FSAE team and its supporters like WEEF receive exposure at numerous events such as the Toronto Int'l Auto Show, Molson Indy, SAE World Congress, as well as numerous community events (Oktoberfest Parade, Santa Claus Parade, Canada Day Celebrations). The team also actively presents the car to UW students during Frosh week, Student Life 101, Alumni celebrations and by test-driving at various parking lots around campus.

Description of Proposal:

To purchase the following equipment in order to further the development of the current and future Formula SAE Teams.

ITEM	DESCRIPTION
1	Driver Safety and Fire Protection
2	Engine Development
3	Testing Equipment
4	Tire Testing

Proposal Benefits:

Driver Safety and Fire Protection:

Due to regulation changes a majority of the driver protection equipment that we have been using over several years is now obsolete. This requires the purchase of six-point restraints, various materials for crush structure development and two part foam used for the seat and roll-hoop padding. In addition we would like to perform ergonomic studies and a comprehensive seat design which has been lacking to date. This requires composite materials and access to a 3-D scanner. Due to new rules mandating standardized cockpit dimensions this design would be reusable for the foreseeable future.

Engine Development:
In 2008 thanks to WEEF we were able to achieve our goal and managed to complete the endurance event. Having attained reliability we would like to reach the next level and be competitive by improving fuel economy. This requires dynamometer testing at our sponsor, Cycle Improvement. In addition it requires a dedicated electronics suite for in house diagnostics and dyno testing which is reusable for up to five years. We have already purchased and serviced the 2009 car engine in preparation for this fall.

Tire Testing Equipment:
Data acquisition is vital to the better understanding of the vehicle and onboard systems. By gathering necessary data, students will learn and be able to assess where improvements can be made and understand the characteristics of vehicle dynamics. With WEEF's help we have acquired a number of components as part of a framework data acquisition system and have been using them for some time. We would like to purchase real-time tire temperature sensors in order to make best use of our limited tire supply. These sensors will provide more data for suspension design through testing. They would be a valuable addition to the team since they are considerably more re-usable than the tires themselves.

Wheel Shells & Rims:

Wheel shells have different offset depending on the packaging of the wheel assembly in order to obtain proper track width and stiffness. This year, we are planning to move the brake assembly from outboard to inboard to decrease vehicle weight. To accommodate this change, we foresee needing 6 new wheel shells with offset different than current vehicle. Material is also needed for the wheel centers, which will be manufactured by our sponsor, Miltera. Each wheel shell and wheel center material cost $242. Two spare front wheel assemblies will be transferred from last year's vehicle.

Cost Breakdown:

ITEM*	DESCRIPTION	COST
1	Driver Safety and Fire Protection	$1500
2	Engine Development	$1500
3	Tire Testing Equipment and Tools	$1000
4	Wheel Shells & Rims	$1500
	TOTAL	**$5500**

in order of highest to lowest priority

Implementation Schedule:

The items listed above would be purchased as soon as possible. Each item would have an immediate positive impact on the 2009 FSAE team as well as future teams.

- Thank You for Your Contribution -

Title:

2009 Great Northern Concrete Toboggan Team

Submitted By:

Name: Chad Van der Woude

E-mail: crvander@uwaterloo.ca

Phone Number: 519-498-2552

Team/Department: GNCTR 2009

Position: Technical Co-Captain

Description of Proposal:

The Great Northern Concrete Toboggan Race (GNCTR) is an annual event that draws over 400 undergraduate engineering students from across Canada to compete in a design competition that challenges technical knowledge, ingenuity and creativity. This competition asks teams to design and construct a 300 lb concrete toboggan to be manned by a 5 students as it is raced down a ski slope. Entries into the competition are judged on creativity and technical proficiency in the sled's concrete mix design, frame and braking systems, as well as overall team enthusiasm and spirit.

WEEF has generously sponsored the UW GNCTR team previously and we hope that the committee will see fit to continue WEEF support according to the following funding proposal.

Proposal Benefits:

The University of Waterloo is considered a leader in technology and innovative education. By performing well in the technical aspects of the competition, the concrete toboggan team is able uphold and promote this reputation. This past year the concrete toboggan team was placed First Overall and we hope to make it back to back championships! It is also the 35th anniversary of the competition so a win by Waterloo would be especially impressive.

The WEEF logo will be proudly displayed on all equipments purchased as a direct result of the WEEF support. WEEF will gain extensive visibility throughout the University of Waterloo Campus, and other Universities across Canada who attend the event.

Cost Breakdown:

Individual costs are as shown:

Frame and Braking Construction:

Aluminum / Tubing Material	$200

Concrete Materials		$150
Electrical Materials		$150
Welding Equipment & Material		$150
Hydraulic Shocks (5)		$1,500
Competition Entry Fees:		
35 Members	$150x35=	$5250
Shipment Fees:		$500

Option 1 is for competition fees, construction materials, and shipment fees; Option 2 is for both competition fees and construction materials; Option 3 includes competition fees and shipment fees.

Item	*Option #1*	*Option #2*	*Option #3*
Competition Fees (35 people x $150)	$5,250.00	$5,250.00	$5,250.00
Construction Materials	$2,150.00	$2,150.00	$0.00
Shipment Fees	$500.00	$0.00	$500.00
TOTAL:	$7,900.00	$7,400.00	$5,750.00

Implementation Schedule:

The team plans to begin construction by the end of the Summer 2008 term, purchase of construction materials would begin in approximately July. Competition Fees are due late November 2008.

Additional Information:

A copy of the sponsorship pamphlet put together by the 2009 Concrete Toboggan Team will be brought to the WEEF presentation as supplemental information for the committee to review. UW GNCTR has acquired a locked storage area through the Civil Department for the storage of safety equipment and materials so that it may be passed onto the future GNCTR teams.

Title:

The Iron Warrior.

Submitted By:

Name: Sunny Ng

E-mail: iwarrior@engmail.uwaterloo.ca

Phone Number: 519-888-4567 x32693

Team/Department: The Iron Warrior

Position: Editor-in-Chief

Description of Proposal:

The Iron Warrior is swapping office space with WEEF sometime in the near future. In order to accommodate this new increased space as well as to efficiently utilize the room, there is a need to purchase new furtnitures such as tables and cabinets, as the ones the Iron Warrior have either take up too much space than necessary (they are also not actual computer tables) or are falling apart.

The Iron Warrior would also like to invest in a set of professional photography tools. This would include an SLR camera and lenses. While IW currently has a digital camera, it is not SLR and its quality is low. Because of that, it is actually rarely used as we usually have to rely on others' cameras for use in our publication.

Proposal Benefits:

The Iron Warrior is the official newspaper of the University of Waterloo Engineering Society and is also the largest entirely student volunteer-run publication on campus. With a bi-weekly circulation number of 2000, it is recognized by the faculty, the Dean's office as well as across the nation to represent Waterloo Engineering. It regularly covers events held by the Engineering Society and achievements of student teams. The Iron Warrior provides great opportunities to the UW Engineering Undergraduate student body to develop valuable experience in leadership and communication as well as a creative outlet for students to express themselves and be heard. The IW office is also used by Engineering Society's TSN Directors to produce End-of-Term videos.

By having a professional set of photography tools, we would be able to improve the quality of our content and will be able to attract students to photography enthusasists to volunteer for IW.

Cost Breakdown:

Insert a simple cost breakdown summary (including partial funding options) here.

Item	*Option #1*	*Option #2*	*Option #3*	*Option #4*
Tables	$1,000.00	$1,000.00	$1,000.00	$500.00
Cabinets	$1,000.00	$1,000.00	$1,000.00	$500.00
Camera/Lenses	$1,000.00	$900.00	$720.00	$550.00
TOTAL:	$3,000.00	$2,900.00	$2,720.00	$1,550.00

Implementation Schedule:

Camera and lenses will be purchased once funding is approved (late July).

Furniture purchasing will occur after IW moves to WEEF office and once IW finishes its publication for the term and TSN Directors no longer require using the room (beginning to mid August).

Title:

Bringing The Ontario Engineering Competition To Waterloo In 2010

Submitted By:

Name: Adli Nureddin

E-mail: anureddi@uwaterloo.ca

Phone Number: (416)-985-8545

Team/Department: Ontario Engineering 2010

Position: VP Finances

Description of Proposal:

The 2010 Ontario Engineering Competition will be held in Waterloo in February 2010. The three day event attracts over 400 engineering students, selected judges, sponsors, faculty, and professionals from all over Ontario. With events ranging from design competitions to debates, the competition will cover every aspect of being an engineer. The WEEF proposal will help fund materials associated with the competitions and the event as a whole.

Proposal Benefits:

The competition itself will involve over 200 undergraduate engineering students

Gain exposure for the university and engineering faculty, in accordance with UW's Vision 2010 plan. Showcase graduate engineering opportunities

Expose UW students to the Engineering students

Connect university with valuable industry contacts.

WEEF will be treated as an event sponsor and recieve valuable exposure.

Cost Breakdown:

Item	*Option #1*	*Option #2*	*Option #3*
Design Competition Materials	$3,000.00	$3,000.00	$3,000.00
AV Equipment-Staging/Sound/Video	$2,500.00	$1,500.00	$1,500.00
Banquet Hall Rental	$4,000.00	$2,000.00	$1,500.00
Competition Awards	$3,000.00	$3,000.00	$2,000.00
Sponsorship Packages/Plaques/Boards	$2,000.00	$2,000.00	$1,500.00
Office Supplies/Website/Printing	$500.00	$500.00	$500.00
TOTAL:	$15,000.00	$12,000.00	$10,000.00

Implementation Schedule:

Current costs will be mostly devoted to sponsorship packages and planning, but costs incurred in the future will require funding as well. Venue bookings and deposits will also be required in the near future.

Additional Information:

The overall budget for this event is estimated to be $200,000.00, a slight increase upon the previous year's competitions, but with 18 months in front of us, this is a conservative estimate. Much of the budget will be covered through sponsorship, but there is much more to be raised. The office of the dean of engineering has commited to providing significant funding (greater than amount we are requesting from WEEF) .

Title:

Funding For Engineering Orientation Weeek

Submitted By:

Name: Matt Tse

E-mail: mtse@uwaterloo.ca

Phone Number: 519-590-8236

Team/Department: Engineering Federation Orientation Committee (EngFOC)

Position: EngFOC

Description of Proposal:

In 2008, EngFOC is expecting approximately 1200 incoming first year students to participate in Orientation Week. The well known Education Committee will require several items to successfully run the week. This may include several building tools such as saws, wrenches, wood, nails. Edcom and the FOC will also require more Megaphones for proper communication and to give proper instruction to a large group in an outdoor setting.

Additional funding for the First Year item to be placed in their Orientation kits is also being requested. This will provide additional exposure for WEEF to the incoming students.

Proposal Benefits:

Awareness: Expected 1200 incoming first year students will be exposed to WEEF and what it symbolizes both prior and during Orientation Week. This is the first opportunity that WEEF will have to show to the first years what they do for the Engineering student body.

Appreciation & Encouraging Involvement: Orientation Leaders put in an enormous amount of time and effort to ensure the success of Orientation Week at the University of Waterloo. Not only are the leaders involved, but the various student teams that have a presence during the week as well. The first year students see this and associating WEEF with this high level participation, leadership and involvement will encourage further interest in other student run projects and WEEF itself.

Exposure: WEEF will also have their logo placed on various items throughout Orientation Week and on the official Engineering Orientation Website. This will reach approximately 1200 incoming Engineering student.

Cost Breakdown:

Insert a simple cost breakdown summary (including partial funding options) here.

Item	*Option #1*
Tools	$1,000.00
Megaphones	$1,000.00
Frosh Kit Items	$1,000.00
TOTAL:	$3,000.00

Implementation Schedule:

Item will be used during Orientation Week 2008 from Sept 1 - Sept 6 and beyond.

Title:

University Of Waterloo Robotics Team

Submitted By:

Name: Ryan Gariepy

E-mail: rgariepy@uwaterloo.ca

Phone Number: 519-502-3701

Team/Department: University of Waterloo Robotics Team

Position: Technical Leader

Description of Proposal:

The UW Robotics Team is continuing to increase the scale of our projects while still remaining flexible in the support of new projects and ideas. We have confirmed four fourth-year engineering projects and are expecting more. We are requesting funding for the following projects from WEEF:

1) ALARM: Lead acid battery, four motors, four encoders, SAM7 headers, partial funding for a PC

2) ARCON: Four high torque integrated steppers/drivers

3) Tronmower: Two new motors and encoders

3) Sumo Competition supplies

4) Lab equipment (portable GPS, portable oscilloscope)

Proposal Benefits:

The UW Robotics Team has 40 active members from all years. We have just returned from three international competitions. We are planning for an expansion this fall as we start four new fourth year projects (14 people, so far) and continue our recruiting push. Funding from WEEF will allow the team to support these new projects as well as our existing initiatives such as our 1st year Mini-Sumo contest.

Cost Breakdown:

Insert a simple cost breakdown summary (including partial funding options) here.

Item	Option #1	Option #2	Option #3
ALARM Supplies (listed above)	$908.00	$1308.00	$1708.00
ARCON Supplies (listed above)	$480.00	$480.00	$480.00
Tronmower Supplies (listed above)	$100.00	$200.00	$400.00
Sumo Competition	$500.00	$500.00	$500.00
Portable GPS	$100.00	$100.00	$100.00
Portable oscilloscope	$0.00	$500.00	$1,000.00
TOTAL:	$2,088.00	$3,088.00	$4,188.00

Implementation Schedule:

The Autonomous LAndmine Removal Mechanism (ALARM) project has already started. The electrical equipment listed will be purchased near the end of this term..

The Autonomous RC CONversion (ARCON) project has also begun ahead of schedule. The project will need the stepper motors listed above as soon as possible.

Sumo competition supplies will be purchased before the start of next term.

The portable GPS has already been bought.

Purchase of the scope requires an appropriate used scope to be found.

Additional Information:

Marauder recently placed 4th place out of 14 in the RoboGames autonomous navigation competition in San Francisco. The Marauder design will be improved for use in the ALARM project.

A past award winning chassis that was primarily funded by WEEF ("Ares") was recently refurbished and entered in the Intelligent Ground Vehicle Competition in Michigan.

This will be the third sumo competition the team has run. Last year, 14 first year teams entered.

Recent/Upcoming Publicity:

-Student Life 101

-Frosh Week student teams lunch

Title: Sustainable Technology Education Project (STEP)

Project: Human Powered Energy Source

Submitted By:

Name: Kyle Anders

Program: Mechanical Engineering Graduate Student

Student ID: 20251233

E-mail: ka2ander@uwaterloo.ca

Phone Number: x32319

Position: STEP Project Manager

Description of Proposal:

The organization STEP requests components required to build a bicycle powered electrical generator. We would to build a prototype of this generator as a demonstration project for electrical power production to educate the public and overall student body. We are currently working on a design scheme to mount the bike and connect it to the generator.

Purpose:

The long term goal is to design and build a modular system of bike generators, using cheap and readily available components, which can be operated simultaneously in order to collectively power a common electrical device. This will demonstrate to the public the value of electricity in terms of physical energy input, as well as display some of the typical mechanical and electrical characteristics of an alternative energy system. Ultimately, we hope to power a major community event such as a concert or festival, and use this for increased public awareness and fundraising in support of STEP's long term renewable energy projects. Funding will be required in the initial stage to manufacture a single working prototype that can then be used in the reproducible design.

Background:

STEP started in January 2002 and has since successfully installed a solar array on Fed Hall. STEP is also collaborating with Plant Operations to install solar thermal panels for water heating in Village 1, has nearly completed performance monitoring system for the solar array, and is working with faculty to pursue a wind power installation on campus. STEP also runs a number of educational events each term to raise awareness about renewable energy. The STEP bike generator will supplement these educational events and aid in fundraising efforts for the larger projects.

Benefits to Students:

- Engages engineering students in STEP to take hands-on, multi-disciplinary approaches in learning about and developing cheap, clean energy sources.
- Design project opportunity for fourth year engineering undergraduates (ME481/482, SD461/462, ECE 492/499)
- Provides a valuable demonstration and fund raising tool that can raise the profile of UW's sustainable activities at campus and community events while serving as a source of revenue for further student engineering projects

Student Involvement:

STEP currently has 113 active undergrad student volunteers this term, in addition to 6 senior STEP members who are now Graduate Students, and finally 5 active faculty advisors.

Timeline:

Overview

Preliminary Planning and Discussions September 2007
Detailed Design May 2008

Future

- Working prototype to be completed by December 2008
- Final multiple bike generator to be completed by May 2009

STEP Budget Summary:

The following outlines the components needed for the installation:

Item	Qty	Unit Price	Total Price
Bike training stand	1	$100.00	$100.00
Electric scooter motor (as generator)	1	$35.99	$35.99
DC to AC power inverter	1	$49.99	$49.99
Buck/boost circuit	1	$49.99	$49.99
Front wheel block	1	$9.99	$9.99
Power meter & display	1	$121.99	$121.99
Misc. materials			
motor mount	1	$40.00	$40.00

drive system (roller and bearings)	1	$30.00	$30.00
additional gearing	1	$60.00	$60.00
		sub total	**$497.95**
		tax	$69.71
		Total	**$567.66**

Fund	Requested Contribution
Waterloo Engineering Endowment Fund	**$567.67**

Sincerely,

Kyle Anders

Sustainable Technology Education Project (STEP)

Project Manager

Title: UWAFT Spring 2008 Proposal

Submitted By:

Name: Alexander Koch
E-mail: alexkkoch@gmail.com
Phone Number: 519-888-4567 x36208
Team/Department: University of Waterloo Alternative Fuels Team
Position: Team Captain

Description of Proposal:

You may have already heard that UWAFT has officially completed Challenge X and has become the first student team to successfully develop a passenger hydrogen fuel cell vehicle. The next step for UWAFT is EcoCAR. A similar three year competition with the intent to re-engineer a Saturn VUE to be more fuel efficient, have reduced harmful emissions and still maintain performance and consumer acceptability. The first year of competition focuses heavily on design through modeling and simulation with the help of hardware-in-the-loop (HIL) test setups. As UWAFT moves into the first year of this new competition, we need the help of WEEF to maintain some of our existing equipment and aid in purchasing some new hardware. One huge difference with this competition is that there is now a requirement to provide students with class credit when working on the team. This is a huge step for student competitions and will attract many more students to join UWAFT. We hope WEEF share's UWAFT's optimism in what vast opportunities this multi-year competition can provide to undergraduate engineering students at UW.

Proposal Benefits:

For the first year we will need a large amount of computer power for two things: Computer Aided Design, modeling/simulations. A strong computer workstation is essential to the team's success. Although these powerful computers are available in labs such as the mechanical 4th year room, UWAFT feels it would be inappropriate to take these resources away from undergrads needing them for other projects. UWAFT supports many 4th year student projects each term and a computer workstation will help further facilitate these projects by providing a great resource for design.

In addition dedicated workstations will help UWAFT train its core members who in turn will help run what UWAFT calls *Super Saturdays!* Here we provide tutorials on some of the software packages we use and are available to all undergrads, even those not on the UWAFT team. We understand that this helps reduce the load on people like Jim Baleshta and Colin Campbell and the training sessions they run on Unigraphics NX and MATLAB/Simulink (both available at UWAFT's Super Saturday training sessions).

To aid in the setup of the HIL test bench a soldering station and array of Deutsch electrical connectors will be necessary. UWAFT uses Deutsch connectors because of their high degree of safety and durability. Some specialty tools are required to use these connectors that will also need purchasing.

Storage systems for parts and desk space for students will help provide UWAFT members with an appropriate area to work efficiently in the small area beside the garage.

UWAFT still owns the Silverado developed during the FutureTruck Challenge in 2000. 'Silvia' as the team calls her, is the team's workhorse. However, not only does UWAFT use the truck but so do many of the other student teams for transporting vehicles and people during important events. Silvia requires important safety maintenance to ensure her long life. The truck requires a tune-up and new tires. Also to maintain the vehicle's body a bed lining will prevent rusting and damage from hauling loads.

Additional safety equipment for the shop is required. UWAFT deals with many high voltage components and as a result safety gloves and a carbon fiber rescue pole are needed. Also for the garage, a new floor coating will prevent harmful fluids (battery acid, coolant, etc) from seeping into the old concrete and floor cracks. In addition our vehicle hoist requires a safety inspection in the coming months before heavy use in the fall.

The competition will still have a strong outreach component (similar to Challenge X) where the team will reach out to the community to educate the public and younger students about the world's energy issues. A laptop dedicated to outreach purposes will aid in our ability to give presentations to undergrads and schools across Canada. It will provide the ability to customize presentations on the go depending on the audience and will result in a better overall experience. Also, our team has many individuals who will require the use of this laptop (business director, outreach coordinator, community events team leader, media team leader, and web development team leader) who will be extensively involved with duties such as sponsorship, making presentations, developing flyers, and communication. In addition to the laptop, a multifunction printer would allow the team to produce quality handouts during outreach events so that the audience is able review the information presented at a later date.

Cost Breakdown: (critical in yellow)

Item	*Option #1*	*Option #2*	*Option #3*	*Option #4*
Tools/Shop Supplies	**$750** – ladder, rotary tool, Deutsch connectors, soldering station	**$500** - Ladder, soldering station, Deutsch Connectors	**$300 –** ladder, Deutsch connectors	
Storage/Desk	**$500 –** parts storage cabinets, shelving, computer desk	**$300 –** parts storage cabinets, computer desk	**$200** - shelving	
Plotter	**$5895 –** hp plotter full funding	**$4500 –** partial funding	**$3000 –** partial funding	
Modeling/ CAD PC	**$2110 –** workstation, monitor, wireless router	**$1610** – workstation, wireless router	**$1500** – workstation	
Silverado Maintenance	**$49,168** – Ford F-250 Harley Davidson Edition ☺	**$1130** – Tires, tune-up, bed liner, tailgate straps	**$730** – Tires, tune-up, tailgate strap	**$400** - Tires
Outreach	**$1450** – laptop, all-in-one printer	**$1200** – laptop, colour printer	**$1000** - laptop	
Shop Safety Equipment	**$1000** – rescue hook, HV gloves, hoist servicing, floor sealant	**$850** – Rescue hook, HV gloves, floor sealant	**$690** – floor sealant, HV gloves	

Implementation Schedule:

Implementation will begin immediately as funding becomes available. This summer is a great opportunity for the team to get prepared for the strong schedule that begins starting mid August when UWAFT attend the first EcoCAR workshop in Boston.

Additional Information:

UWAFT is appreciative of WEEF's past support. If not for prior WEEF funding, we would not be able to continue to benefit UW's undergraduate students. UWAFT makes every effort to promote WEEF within the team and in the engineering community. As we start our new competition we greatly appreciate your consideration of this proposal – you will not regret having your WEEF support sticker on our vehicle!

Title:

Spring 2008 Clean Snowmobile Team - Chassis, Engine, And Sound Equipment

Submitted By:

Name: Kyle Blezard

E-mail: kblezard@engmail.uwaterloo.ca

Phone Number: 519-888-4567 x33953

Team/Department: University of Waterloo Clean Snowmobile Team

Position: Student Member

Description of Proposal:

The University of Waterloo is working towards attending the 2009 SAE Clean Snowmobile Challenge. The objective of the competition is to reduce the enviromental impact of a stock snowmobile while maintaining a high level of performance. The two easiest ways to achieve these goals are to use a lighter, more aerodynamic chassis and by using a more environmentally efficient engine. The old sled is very heavy and bulky, whereas new sled designs use lighter materials with less drag. Also, switching from a 2-stroke to a 4-stroke engine will allow for cleaner emissions and easier tuning. While the engine and chassis are the heart of the team, sound calibration equipment would give us the ability to optimize noise emmissions to competitive levels.

Proposal Benefits:

By participating on the CSC Team, engineering undergraduate students at the University of Waterloo learn valuable hands on skills and exposure to real life engineering applications. The team currently consists of 14 students who participate in many events to help promote UW Engineering such as the SAE CSC itself, KW Santa Claus Parade, UW Energy Days, Toronto International Snowmobile Show, and the recent Ground-breaking for the Eng 5 building. Acquiring an engine and chassis during the summer will give students time to develop the hands-on skills required to modify a stock snowmobile as well as help get 1st and 2nd year students interested in joining during the upcoming Fall term. The current sled has been so heavily modified over the past 4 years that new projects cannot be easily integrated into the design because of the interdependance of past projects from students who have since graduated. The new sled will allow for more future projects and continuing interest for students.

Cost Breakdown:

We are requesting funding for the following items from WEEF:

1. Ski-doo REV MXZ X Chassis: There have been significant improvements in weight savings and aerodynamics since the team last purchased a new sled over 4 years ago and this one will also remain competitive for many years.

2. Yamaha Genesis 120 Engine: Yamaha has the best 4-stroke technology in the industry and this engine is the best option for the current team and will remain competitive for the team to use in future terms.

3. Sound Level Meter: This device will be used to measure the snowmobile's noise level to give an idea of how our sled performs relative to stock levels.

4. Calibration Unit: This unit is a necessary component to calibrate the Sound Level Meter.

Item	*Option #1*	*Option #2*	*Option #3*	*Option #4*
Snowmobile Chassis	$2,012.50	$2,012.50	$0.00	$0.00
Snowmobile Engine	$2,604.00	$2,604.00	$2,604.00	$0.00
Sound Level Meter	$4,000.00	$0.00	$0.00	$4,000.00
Calibration Unit	$1,000.00	$0.00	$0.00	$1,000.00
TOTAL:	$9,616.50	$4,616.50	$2,604.00	$5,000.00

Implementation Schedule:

The chassis and engine have been selected and the purchasing process is currently underway. The chassis and engine are critical to current student projects and therefore, these should be in the shop to begin work as soon as possible. Both items are from local Canadian sources. Target: Early July, '08

The Sound Level Meter and Calibration Unit would be purchased when the sled is assembled, ready to be tested, and funding approval has been granted. Target: September, '08

Additional Information:

The sled we will be entering into the 2009 SAE CSC will be unique as it will integrate the benefits of a 4-stroke engine with a lightweight chassis; the CST is excited to promote Waterloo Engineering and is interested in having Waterloo's own Engineering Endowment Fund as our Title Sponsor for our sled. WEEF would also share the same benefits as our external sponsors including the logo on any team equipment as well as promotional space at all team events.

Current plans are to give the sled a black and yellow colour scheme which would coincide nicely with the WEEF logo sticker.

Title:

International Genetically Engineered Machine (Igem) Competition

Submitted By:

Name: Hillary Yeung

E-mail: hillaryyeung@gmail.com

Phone Number: 226 338 8164

Team/Department: UW iGEM Team 2008; Chemical Engineering student

Position: Design Team and Lab Team Member

Description of Proposal:

The International Genetically Engineered Machine (iGEM) competition, hosted by the Massachusetts Institute of Technology (MIT), is an annual event that involves designing and building biological devices. These devices are engineered by combining biological "circuit elements", analogous to electrical components (e.g. resistors, capacitors). The devices created in the framework of this competition include sensors for the detection of pathogens or environmental contaminants, Schmitt triggers, toggle switches, and oscillators. The University of Waterloo most recently attempted to create a biological half-adder, and for the 2008 competition, the focus will be an ambitious genome-free "factory" for producing therapeutics or other useful products.

Proposal Benefits:

Waterloo's participation in the iGEM competition will benefit both the engineering students involved and the University itself. For students, iGEM is an excellent opportunity to apply what they have learned as undergraduates in a real-life research setting. Working on the iGEM team also develops valuable design, research and teamwork skills not easily taught in the classroom. Furthermore, at the end of the competition participants will have the chance to attend the iGEM jamboree, a conference at MIT where all iGEM teams from around the world will present their projects. This will give undergraduates a high degree of exposure to a cutting-edge international academic community.

iGEM also showcases the University of Waterloo on the world stage, where researchers, industrial representatives in related fields, and news media will be present. iGEM is an opportunity for UW to be recognized as an important contributor to the new and expanding interdisciplinary field of synthetic biology.

Cost Breakdown:

Insert a simple cost breakdown summary (including partial funding options) here.

Item	Option #1	Option #2	Option #3	Option #4
Team Registration Fee	$1,000.00	$1,000.00	$1,000.00	$1,000.00
Student Registration Fee for Competition	$1,200.00	$1,200.00	$0.00	$400.00
Lab Equipment	$1,000.00	$0.00	$1,000.00	$0.00
TOTAL:	$3,200.00	$2,200.00	$2,000.00	$1,400.00

Implementation Schedule:

Access to laboratory space has already been secured, and the design of our device has been planned. Lab equipment and supplies will be purchased immediately so we can begin construction and assembly of the parts required for the device. Team registration will be paid immediately, and student registration fees will be paid at the start of Fall term 2008.

Additional Information:

The UW iGEM team is requesting $3200 from the Waterloo Engineering Endowment Fund, which is about 16% of the cost associated with our project, or 32% of the total outstanding budget for this year. Alternatively, we would accept funding for any combination of the items requested in this proposal. The remaining budget will be requested from organizations such as MEF, WATSEF, UW departments and faculaties, as well as corporations in related industries; travel grants will be requested from the Sandford Fleming Foundation to cover travel and accommodations for team members in Engineering. WEEF has provided the UW iGEM Team with generous support for the last two years, and your continued support is greatly appreciated.

Title:

Warg Construction Supplies, Avionic And Communication Equipment, And Materials

Submitted By:

Name: Jason Dyck

E-mail: jkdyck@engmail.uwaterloo.ca

Phone Number: (519) 590-6065

Team/Department: WARG (ECE/ME)

Position: Team Leader

Description of Proposal:

The Waterloo Aerial Robotics Group (WARG) competes annually in the International Aerial Robotics Competition (IARC), and offers students the opportunity to design and build autonomous aerial vehicles and their subvehicle payloads.

This proposal encompasses several items which will enable us to complete the UAV and subvehicles. These items include chargers for lithium-polymer batteries, variable output power supplies, a dual servo interface unit, avionic equipment, a wireless communication bridge, electrical r/c components, and construction supplies for rebuilding the nose landing gear. Additionally, WARG is assembling a kit of tools which will be needed to service the robots.

Proposal Benefits:

Currently, more than 30 team members are involved in the team's main project, to compete in the IARC's challenge. This term, 12 new members were recruited. Undergraduate engineers directly benefit from a combination of both hands-on and theoretical experience in multidisciplinary design. Our projects span a wide range of engineering fields (ECE, ME, MTE, SYDE, etc.).

WARG represents UW internationally at the IARC, held anually at Fort Benning, in Georgia, and attended by students, academics, and trade and military personnel.

WARG is highly visible in and around the University, frequently promoting UW Engineering at public events and internal demonstrations. WARG has presented before the Dean's Advisory Council, and was prominently featured at the 50th anniversary of Waterloo Engineering gala in 2007. WARG also makes annual displays for Frosh Week, Canada Day, and similar events.

Cost Breakdown:

This proposal can be scaled as necessary, because each line item includes several individual parts. Option #1 gives the maximum expected cost. Options #2-4 give 85%, 75% and 65% of the requested items, respectively.

The battery chargers include Astro Flight 109 Lithium Charger. The variable output power supply includes a BK Precision DC Power Supply and car batteries. The dual servo interface unit includes an Emcotec DPSI-Twin unit and a Multiplex receiver. The avionic equipment includes a MicroStrain 3DM orientation sensor, an airspeed indicator, and an anemometer. The wireless communication bridge includes a Microhard Broadband Ethernet Bridge. Tools includes common items like wrenches, batteries for tools, blades, and extension cords.

Item	*Option #1*	*Option #2*	*Option #3*	*Option #4*
Battery Chargers	$850.00	$725.00	$640.00	$555.00
Power Supplies	$1,200.00	$1,020.00	$900.00	$780.00
Dual Servo Interface Unit	$600.00	$510.00	$450.00	$390.00
Avionic Equipment	$1,000.00	$850.00	$750.00	$650.00
Wireless Communication Bridge	$1,390.00	$1,185.00	$1,045.00	$905.00
Electircal/Construction supplies and Tools	$400.00	$340.00	$300.00	$260.00
TOTAL:	$5,440.00	$4,630.00	$4,085.00	$3,540.00

Implementation Schedule:

This system will be implemented throughout the Spring 2008 term, in preparation for the IARC competition in July 2008. The plane has been flight tested with many positive results allowing full emphasis on autopilot and communication development. Some of these items have been ordered, and WEEF will be asked to approve a request for payment.

Additional Information:

WARG's long list of accomplishments includes over 10 major technical awards at the IARC, including 1st place overall (in 2004), Most Innovative System Design (3 times), Most Innovative Vehicle Design, Best Journal Paper (5 times) and Best Technical Presentation (2 times).

WEEF has long sponsored WARG's activities, and WARG acknowledges this support by prominently displaying WEEF's emblem on the tail of its Hyperion UAV, and on promotional materials and team uniforms.

Contact Information for funding if different than above:

Name: Sergio Suarez

E-mail: suarez.sergio.a@gmail.com

Phone Number: (519) 888-4567 ext. 35019

Position: Treasurer

Title:

Liquid Fuel Rocket

Submitted By:

Name: William Durocher

E-mail: William.Durocher@gmail.com

Phone Number: (519) 957-2697

Team/Department: University of Waterloo Space Society (WSS)

Position: Vice President

Description of Proposal:

We would like to purchase a liquid fuel rocket. The SS67B-3 rocket system is designed for a complete launch. It is fueled by hydrogen peroxide and gasoline, and includes all components (e.g. machined exhaust nozzle, electrical control, tubing, fins) needed to launch a fully-functional rocket.

Proposal Benefits:

The liquid fuel rocket project educates undergraduate engineers and space enthusiasts about propulsion technology used in space systems. UofW currently does not have any liquid propellant technology, making this project academically and practically valuable for those interested in heat transfer, propulsion, fluid dynamics, and modelling. The SS67B-3 rocket is designed for hobbyists and has been implemented at Iowa State University for national rocket competitions. We hope this project attracts undergraduate students to pursue technologies in developing Canada's aerospace industry. The demonstration and understanding of this rocket technology at UW, comes at a pivotal time when the commercial space industry is taking-off.

Once purchased, we will open the project to any student of faculty member who is interested in participating in the rocket construction and flight testing.

Cost Breakdown:

Insert a simple cost breakdown summary (including partial funding options) here.

Item	*Option #1*
SS67B-3 Liquid Rocket Kit	$1,200.00
TOTAL:	$1,200.00

Implementation Schedule:

July 29th - Purchase rocket systems

Sept 1st - Complete building of rockets systems

Sept 15th - First rocket firing

Please see Additional Information as to when and how the rockets will be used.

Additional Information:

SS67B-3: http://pages.total.net/~launch/ss67b3.htm

We intend to demonstrate these rocket technologies at Campus Days, and other engineering events. Once familiar with these rocket technologies, we may pursue entering rocket competitions. This project will be lead by the WSS exec but will be advertised to the student body to encourage those who are interested to join and participate. No special liscences are required to launch this stystem, and we have areoplane pilots on our executive who are aware of air law and airspace restictions.

The rocket costs roughtly $30 to fly. In order to make this project sustainable we will seek corporate sponsorship for each flight. Companies will be able to sponsor a launch for $50-$100.

Title:

University of Waterloo Nanorobotics Group Proposal

Submitted by:

Name: Julianne Kline

E-mail: jkline@engmail.uwaterloo.ca

Phone Number: 905-894-4166

Team/Department: University of Waterloo Nanorobotics Group

Position: Fluid Mechanics and Mechanical Head

Description of Proposal:

The University of Waterloo Nanorobotics Group (UW_NRG) is a unique initiative that allows undergraduate engineering students to participate in ground-breaking research at a high level. Through the guidance of Dr. Yavuz and Dr. Ramahi, and through working closely with many professors, graduate students, and companies, the University of Waterloo Nanorobotics Group is developing a 300μm robot. Some of the main features of the robot include an air-powered microfluidic system, micro-RF technology, an ASIC for control, cup-shaped design and more. The robot will compete at the 2009 RoboCup Nanogram Competition in Graz, Austria. The design has already been featured at the 2008 Undergraduate Nanotechnology Competition as a technical poster.

The group has also expanded to other research projects. Some of these include microfluidic cooling techniques, nanowire research and materials research. The University of Waterloo Nanorobotics Group plans to win the 2009 RoboCup Competition and to continue to develop unique technologies in the fields of nano- and microelectromechanical system and nanomaterials.

Proposal Benefits:

The University of Waterloo Nanorobotics Group may be the only research group of its kind. The group is composed almost entirely of undergraduate engineering researchers who develop unique ideas and technologies. The University of Waterloo is already recognized a being at the forefront of nanotechnology with the development of the Waterloo Institute for Nanotechnology (WIN), and will continue to benefit from the ideas and research generated from UW_NRG.

In addition, undergraduate students benefit by being able to actively engage in research. Normally, a student must approach a professor and join his or her project. In the case of UW_NRG, students come up with their own ideas. They are able to design, simulate, test and publish their own work and not the work of someone above them. This gives students an edge in both co-op and graduate research positions.

Cost Breakdown:

UW_NRG Costs

Sigma Aldrich					
Item	Code	Amount	Requirement	Cost	
Copper Rods (diam 11mm)		365327 21.5 g (25 mm)		5	$482.00
Magnetite		518158 50 g		1	$256.50
Copper Wires	-	30 g		5	$622.50
MicroChem					
Item	Code	Amount	Requirement	Cost	
PMMA and Copolymer Developer	M/I 1:2	500 mL	1 bottle		$320.00
Remover PG	\	1 L	1 bottle		$625.00
PMMA + 11% Anisole Photoresist	950	500 mL	1 bottle		$500.00
8.5 MMA Copolymer (with 11% ethyl lactate)	8.5	500 mL	1 bottle		$450.00
CAS (Mask/Mold company)					
Item	Dimensions Required	Amount	Type	Cost	
Mask	6x6 inch.	5	20000 DPI		$225.00
	14x17	3	20000 DPI		$382.50
Other Fees	Code	Amount	Type	Costs	
Lab technician					$300.00
Lab Fees	Laboratory (G2N, Microfludics Lab, CIRFE Lab)				$1,000.00
Software - ANSYS, COMSOL and CADENCE				$ - (donated)	
Books	Code	Amount	Type	Costs	
ASIC Design in the Silicon Sandbox			1		$93.20
Introduction to Microfluidics			1		$106.00
Nanotubes and Nanowires			1		$112.00
Nanomaterials: An Introduction to Synthesis, Properties and Applications			1		$115.00
			Total:		$5,589.70

Level	Included Items	Amount Requested
1	Lab technician, lab fees, books	1,726.20
2	Lab technician, lab fees, books and mask	2,333.70
3	All	5,589.70

Implementation Schedule:

July 12, 2008 - Perform materials assessment for prototypes

July 19, 2008 - Allocate laboratory space on campus for prototype fabrication

July 27, 2008 - Allocate laboratory space outside of campus for prototype fabrication

August 5, 2008 - Finalize fabrication processes for experimental design with Academic Advisers

August 18, 2008 - Complete all metal sputtering and substrate modifications within the BioChip Laboratory in E3x

August 30, 2008 - Prepare team members using Thermosonic wirebonding process in Microjoining Laboratory

September 4, 2008 - Complete all wire bonding related to fabrication

September 16, 2008 - Finish all thin-film deposition techniques relating to metals using E-beam evaporation and PECVD

October 1, 2008 - Characterize properties of materials using SEM and AFM analysis to determine modifications for second phase of prototyping

October 19, 2008 - Determine modification necessary for system integration into actual robot

November 1, 2008 - Begin fabrication of robotic components layered together in convergence.

Additional Information:

The University of Waterloo Nanorobotics Group has taken steps to reduce the cost of the project. The team has had fabrication facilities available free of charge through the co-operation of professors within the University. Also, some materials have been donated. The team has also had clean room suits and materials donated by Kimberly Clark.

Title:

University of Waterloo Underwater Technology Team – Construction of Neo II

Submitted by:

Name: Julianne Kline

E-mail: jkline@engmail.uwaterloo.ca

Phone Number: 905-894-4166

Team/Department: University of Waterloo Underwater Technology Team

Position: Team Leader

Description of Proposal:

The University of Waterloo Underwater Technology Team ($(UW)^2TT$) is composed of undergraduate engineering students who work towards the common goal of building an underwater robot for the Marine Advanced Technology Education (MATE) Remotely Operated Vehicles (ROV) Competition. The team has designed and created their first robot, Neo I, which competed in the 2007 and 2008 MATE ROV Competition. Neo I featured innovative components such as a head-controlled pan and tilt camera, a six-degree-of-freedom control method, a head mounted display, and an Industrial Steering Device (ISD) for position communication. The following proposal is written to request funding for the Neo II, the next version of the underwater robot. Neo II will compete in the 2009 MATE ROV Competition.

The design of Neo II will be finished by August of 2008. The current goal of the team is for the many of the components to be constructed by incoming first year engineering students. Machining is one of the best ways for new students to become interested in this robotics team. The University of Waterloo Underwater Technology Team is actively searching for new members and are excited for the first years coming this year.

Proposal Benefits:

Since November of 2006, the University of Waterloo Underwater Technology Team has been creating new technologies and developing skilful engineers with a specific focus on the underwater robotics industry. The University of Waterloo will benefit from the students graduating who are already prepared for careers in underwater technology. These students will be able to develop new technologies very shortly after they graduate from their respective engineering fields, instead of needing several years to become familiar with the industry.

In addition, the University of Waterloo will receive a positive reputation from the new underwater technologies that (UW)2TT releases, from the relationships that the team builds with companies and the community, and from the team's presence at the International MATE ROV Competitions.

In addition, the students benefit greatly from Neo II and the University of Waterloo Underwater Technology Team. They are able to follow the development of ideas right from conception to construction. In addition, they learn vital engineering communication skills. The International MATE ROV Competition requires students to submit a poster, technical presentation and technical report. Students increase their readiness for an engineering career by working with $(UW)^2TT$ and developing a variety of skills.

Cost Breakdown:

Section	Item	Cost
Frame/Body	Materials	$300
	Machine Shop Expenses	$300
Sensing System	Electrical Components	$250
	Housings	$200
Vision System	Camera	$500
	Secondary Camera	$200
	Materials	$400
	Electrical Components	$300
	Sensors	$100
	Display	$500
Manipulator	Materials	$250
	Electrical Components	$250
Thrusters	Propellers	$1,500
	Motors	$500
	Materials	$500
Buoyancy	Materials	$50
Miscellaneous	Includes connectors, screws, nuts bolts, etc.	$200
TOTAL:		**$6,300**

**Note: Above project costs are based on previous costs. The above estimate indicates the amount needed to start each component, but does not account for design changes. Neo I is estimated to have cost $20,000 to design and construct.

2007/2008 Donations

Source	Amount
EngSoc	$150
OceanWorks	$500
Dean of Engineering	$1,000
ASI	$2,000
WEEF	$5,112.26
Total	**$8,762**

** Note: Remaining funds are approximately $1000 in WEEF funding.

2007/2008 Product and Service Donations

Source	Item
ANSYS	ANSYS FEA Software
Assembla.com	Web Space
Criterion	2 Plastic Domes
Jet-Cut	Jet Water-Cutting
Leoni, Inc.	Cables
Stratasys	$10,000 worth of prototyping

Levels of Funding

Level	Includes	Amount Requested
One	Body/Frame, Thrusters, No propellers	$1,600
Two	Body/Frame, Thrusters, Vision Systemm No propellers	$3,600
Three	All except for propellors	$4,800

Implementation Schedule:

August 31th, 2008 – Design of Core Components of Neo II Completed

- Core components include frame, body, vision system, power control, and thrusters (layout)

September 1st, 2008 – Large recruitment effort

- Begin construction of core components with a focus on frame, body and vision system

December 30th, 2008 - Design of Supplementary Components Completed

- Items include arm manipulator, sensor board, buoyancy, etc.

February 28th, 2009 - Completion of construction of core components

March 31st, 2009 - Completion of construction of supplementary components

April 1st – June 30th, 2009 – Testing

Title:

Purchase Of Two Coolers For Engineers Without Borders

Submitted By:

Name: Gajan Sathananthan
E-mail: gsathana@uwaterloo.ca
Phone Number: 226-220-8705
Team/Department: Engineers Without Borders
Position: VP Fundraising

Description of Proposal:

Engineers Without Borders requires two coolers for BBQs that we run throughout the year to raise funds for causes such as overseas microfinance projects, and overseas volunteer costs. The three options are based on 3 different types of coolers, a 40qt model with wheels for $29.63, a 36qt model able to keep ice frozen for up to 5 days for $34.86 and a 48 qt one for $19.94. The options all insist that the the 48qt one be bought but leave it open as to what the second cooler could be. All prices are attained from Walmart.ca on July 2, 2008 (Note: they are not sale prices)

Proposal Benefits:

The BBQs will provide lunch to students at reasonable prices, in convenient locations. It will also give students the oppurtunity to support a variety of causes, such as microfinance and fair trade without giving a donation directly.

Cost Breakdown:

Insert a simple cost breakdown summary (including partial funding options) here.

Item	Option #1	Option #2	Option #3	Option #4
Cooler 1	$19.94	$19.94	$19.94	$0.00
Cooler 2	$29.63	$34.86	$19.94	$0.00
	$0.00	$0.00	$0.00	$0.00
	$0.00	$0.00	$0.00	$0.00
	$0.00	$0.00	$0.00	$0.00
	$0.00	$0.00	$0.00	$0.00
TOTAL:	$ 49.57	$ 54.80	$ 39.88	$ 0.00

Implementation Schedule:

N/A

Additional Information:

Contact Information for funding if different than above:

Name:
E-mail:
Phone Number:
Position:

Title:

2008 Spring Term Wombat Funding Proposal

Submitted By:

Name: Rob Sterling
E-mail: rsterlin@engmail.uwaterloo.ca
Phone Number: 519-954-2233
Team/Department: Waterloo Off-Road Mini Baja Team
Position: Team Member

Description of Proposal:

Safety equipment: 3 Helmets ($120 ea), 2 Neck Braces ($49 ea), 4 Wrist Restraints ($55/pair), 2 Goggle Tear-aways ($20/pack), 2 Safety Belts ($125 ea), 2 Fire-Proof Jackets ($175 ea), 2 Gloves ($25/pair) :
Total: $1368

Parts: 2 Front Wheel Hubs ($55 ea), 6 Brake Calipers ($179 ea), 2 Brake Rotors ($44 ea), 2 Kill Switches ($53 ea), Brake Light ($79), 2 Drive Shafts ($280 ea), 8 Tires ($105 ea), 6 Rims ($155 ea), 2 Clutch Cover Sets ($200 ea) :
Total: $4187

Tools: Lock Wire Pliers ($30), Impact Wrench ($170), Hand Tools: Screwdrivers, Hex Keys, Hammers, Punches/Chisels, Tin Snips ($180), Air Pump and Tank ($135) :
Total: $515

Driver Training Equipment: 20 Pilons ($8 ea), 2 Stopwatches ($40 ea) :
Total: $240

Proposal Benefits:

This proposal benefits all current and future engineering students that join the UW Mini Baja team. The team is open to all engineering students in any year, in any dicipline. All equipment that the past and current teams use is left for future teams. It is the goal of the team to continue building on previous success and become as competitive as possible with very highly funded american schools.

As in any endeavour, especially in our venture of off-road racing, driver safety is always a first priority. New safety equipment will benefit current and future drivers for several years. Without new safety equipment, the team will not be allowed to compete in 2009 SAE Baja Competition

Several replacement parts are needed to keep current Baja vehicles running. These parts will be reused on future Baja vehicles.

New tools would aid us significantly in being able to maintain dependable vehicles.

Driver Training equipment will assist us in preparing drivers for competition conditions.

Cost Breakdown:

Item	*Option #1*	*Option #2*	*Option #3*	*Option #4*
Safety Equipment	$1,368.00	$1,368.00	$1,368.00	$1,368.00
New/Replacement Parts	$4,187.00	$3,500.00	$3,000.00	$2,500.00
Tools	$515.00	$450.00	$350.00	$300.00
Driver Training Equipment	$240.00	$200.00	$120.00	$120.00
	$0.00	$0.00	$0.00	$0.00
	$0.00	$0.00	$0.00	$0.00
TOTAL:	$6,310.00	$5,518.00	$4,838.00	$4,288.00

Implementation Schedule:

Safety Equipment will be used immediately for driver training using both Baja vehicles.

The parts will be used on the current vehicles to replace parts damaged during the 2008 Baja competition. Tires, rims, and brake components will replace the worn parts currently being used on the vehicles.

Tools will be used immediately to repair the current vehicles.

Additional Information:

Two pieces of each safety item listed is the minimum required quantities to enter 2 vehicles into the Baja competition. This equipment can be used for a maximum of 3 years before it must be replaced to comply with SAE rules. All the current safety equipment expires at the end of 2008. New safety equipment is a must to continue next year.
OEM parts purchased by team are all re-usable from year to year. Parts include brake calipers, rotors, rims, tires, driveshafts and suspension.

Contact Information for funding if different than above:

Name: Duane Cronin
E-mail: dscronin@uwaterloo.ca
Phone Number: x32682
Position: Faculty Advisor