PROPOSALS

Fall 2010

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		Departments Total	$192,525.50
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22	28	UW ASIC	$1,670.00
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24	32	IEEE Student Branch	$400.00
25	34	UW NRG	$6,800.00
26	36	UWAFT	$3,996.00
27	38	UWMAV	$10,737.00
28	40	WARG	$4,000.00
29	42	UWRT	$5,500.00
30	43	WatSat	$475.00
31	45	FSAE	$8,545.00
32	47	Mars Rover Team	$3,200.00
33	49	Baja SAE	$2,446.29
34	51	Engineers Without Borders	$315.00
35	52	Midnight Sun	$4,500.00
36	54	Chemical Engineering Student Society	$59.99
37	55	STEP	$5,381.75
38	57	Iron Warrior	$1,740.00
39	58	Fourth Year Design: Wireless Wearable Medical Device	$304.20
		Student Teams Total	$83,145.76
		Misc	
40	60	Engineering Student Machine Shop - Mill Acquisition	$10,000.00
		Grand Total	$285,671.26

Title:

School of Architecture Proposal

Submitted By:

Name: Myles McCaulay and Kemal Alladin
E-mail: mmccaula@uwaterloo.ca, kaalladi@uwaterloo.ca
Team/Department: School of Architecture
Position: Waterloo Architecture Student Association: WEEF representatives

Description of Proposal:

This proposal is in part a continuation of previous efforts to save up funds to purchase a 3D printer for the fabrication lab. It also proposes the replacement of older, less reliable equipment in the workshop and digital lab.

Proposal Benefits:

The purchase of the 3D printer will enable extremely detailed, and accurate rapid prototyping. This is of benefit to all architecture students who frequently need to create massing and sketch models. The jointer is important to maintaining the quality of the wood shop. Replacing our current jointer will allow students to use large pieces of wood that previously could not be jointed. This is crucial for many upper year projects. Finally, upgrading to SSD Camcorders that can shoot in full HD provides a significant increase in the durability and reliability of our current equipment. This equipment will be incredibly useful for digital projects, documentation, and student entered competitions. All of this equipment will be available and beneficial to all architecture students. It will be stored in the School of Architecture and maintained by the workshop and computing staff.

Estimated Equipment Lifetime:

The 3D Printer is expected to last over ten years. The SSD Camcorders and the jointer are both expected to last between five to ten years. All of this equipment will retain its usefulness throughout its lifetime.

Cost Breakdown:

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

Item	*Option #1*	*Option #2*	*Option #3*	*Option #4*
Dimension SST 1200es Printer	$6500.00	$6000.00	$0.00	$0.00
8" Jointer (replacement)	$2000.00	$1000.00	$0.00	$0.00
Full HD SSD Camcorders (replacement)	$3500.00	$2100.00	$1400.00	$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:				

Implementation Schedule:

The balance for the Dimension SST 1200es Printer has been accumulating over the last several terms. With this terms allocation enough money will have been accumulated for its purchase. The jointer will be available for purchase this term, however we intend to accumulated funding for the SSD Camcorders over the next two terms. The purchase of these Camcorders will coincide with the upgrade of the Digital Media lab. This term we wish to begin the upgrades buy purchasing three-five new Camcorders, working towards upgrade the ten current Camcorders.

Title:

Civil Fourth Year Room Equipment

Submitted By:

Name: Marc Tan
E-mail: marc.tan56@gmail.com
Team/Department: Civil Engineering
Position: Waterloo Architecture Student Association: N/A

Description of Proposal:

The Civil Fourth Year Room is in major need for new equipment. This room is very old and has many many items in it that no longer work or are damaged beyond repair. The Civil 2012 Class would like to make a proposal for new equipment for this room in order to enhance our learning experience at UW and make updates to the 4th year room with new equipment.Proposal Benefits:

Proposal Benefits:

All 4th Year Civils from this year-onward will benefit from the use of this equipment. Our academic experience will be enhanced through this new equipment. No storage or security conditions are requierd as the room is already secured with a number pad lock.

Estimated Equipment Lifetime:

The estimated life time of this equipment is 10 years, depending on its usage. Little to no maintenance is required on this new equipment.

Cost Breakdown:

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

Item	*Option #1*	*Option #2*	*Option #3*	*Option #4*
Stapler	$50.00	$20.00	$50.00	$20.00
Pencil Sharpener	$10.00	$10.00	$10.00	$10.00
Printer	$300.00	$200.00	$300.00	$200.00
Chairs	$500.00	$500.00	$500.00	$500.00
	$0.00	$0.00	$0.00	$0.00
	$0.00	$0.00	$0.00	$0.00
TOTAL:	$ 860.00	$ 730.00	$ 860.00	$ 730.00

Implementation Schedule:

Implementation will occur once funding has been granted, within 1 - 2 weeks. Purchases will be made at a local store, such as Office Depot, Staples, etc..

Additional Information:

We thank you for this consideration.

Contact Information for funding if different than above:

Name: Marc Tan
E-mail: marc.tan56@gmail.com
Position: N/A
Phone Number: Insert Phone Number Here

Title:

Survey Level And Tripods

Submitted By:

Name: Terry Ridgway E-mail: tridgway@uwaterloo.ca Phone Number: x33042
Team/Department: Civil and Environmental Engineering Position: Lab Technologist
Room/Building Location of Equipment: E3 - 2103
Approximate Number of Undergrad Use: 120 Civil and 100 Eniviro/Geo
Engineering Undergrad Courses: CE 125, ENV 100, ENV 330 and 400 projects if needed

Description of Proposal:

Purchase 10 Levels and Tripods to replace aging survey levels

Proposal Benefits:

The levels are used in the Engineering concepts course taught to 1st year students in September and in the spring as part of ENV 330 Field measurement course. The levels are also available to be borrowed by students for other projects as needed. The levels being replaced were purchased in 1995 are are showing their age and wear and tear from use.

Estimated Equipment Lifetime:

15 years

Cost Breakdown:

Option #1 full WEEF Funding, Option #2 CEE Dept. funds 25%

Item	*Option #1*	*Option #2*	*Option #3*	*Option #4*
10 B40 Levels @$258.00	$2,580.00	$0.00	$0.00	$0.00
10 Dome Tripods @ $168.41	$1,684.10	$0.00	$0.00	$0.00
10 B40 Levels @$258.00 less 25% Dept	$0.00	$1,935.00	$0.00	$0.00
10 Dome Tripods @ $168.41 less 25% Dept	$0.00	$1263.10	$0.00	$0.00
	$0.00	$0.00	$0.00	$0.00
	$0.00	$0.00	$0.00	$0.00
TOTAL:	$4,264.10	$3,198.10	$ 0.00	$ 0.00

Implementation Schedule:

Spring 2011 and Fall 2011

Additional Information:

The replacement will allow a few older levels to be kept as spares because currently we have none available due to increasing enrollment.

Contact Information for funding if different than above:

Name: Bonnie Neglia E-mail: bneglia@uwaterloo.ca
Position: Admin Assistant Phone Number: x 33681

Title:

Repair And Calibration Of Direct Shear Machine

Submitted By:

Name: Anne Allen E-mail: anne.allen@uwaterloo.ca Phone Number: ext 33656
Team/Department: Civil and Environmental Engineering Position: Lab Technologist
Room/Building Location of Equipment: E2 - 2345
Approximate Number of Undergrad Use: Aproximately 200 - 230 students per year
Engineering Undergrad Courses: CivE 353 and CivE 354

Description of Proposal:

Direct Shear machine was damaged during student use in CivE 354

Proposal Benefits:

Insert a list of proposal benefits here. This includes how this project will improve undergraduate engineering, and how students could benefit from this proposal.

Estimated Equipment Lifetime:

Intended lifetime is unknown, but this would be the first time it has needed repair since the equipment was purchased in July 2006.

Cost Breakdown:

Option #1 is paid by WEEF. Note, the technicians repair cost is an aprox. total cost and aprox. repair time - it could take longer or it could take less time, this also applies to the estimated kms and travel time. Option #2 is with the department paying 25% of the cost.

Item	*Option #1*	*Option #2*	*Option #3*	*Option #4*
repair tech's hourly rate @ $125/h aprox. 3hrs	$375.00	$282.00	$0.00	$0.00
repair tech's driving time aprox. 2 hrs @ $68/hr	$136.00	$102.00	$0.00	$0.00
mileage @ 50cents/km - aprox 80kms one way	$80.00	$60.00	$0.00	$0.00
repair parts as follows: rods - cost is aprox.	$350.00	$263.00	$0.00	$0.00
-knobs and brass screws	$29.00	$22.00	$0.00	$0.00
-porous stones	$56.00	$43.00	$0.00	$0.00
TOTAL:	$1,026.00	$ 772.00	$ 0.00	$ 0.00

Implementation Schedule:

We would need to have repair technician here in the month of November, once the parts came in. The machine would then be fixed and ready to use for CivE 353 in the winter term 2011.

Title:

Dionex1100 Ion Chromatograph.

Submitted By:

Name: Mark Sobon E-mail: msobon@uwaterloo.ca Phone Number: 35263 Here
Team/Department: Civil\Environmental Engineering -Water Resources Position: Lab Technician.
Room/Building Location of Equipment: DWE-3506-Teaching Lab.
Approximate Number of Undergrad Use: Approx. 250 Undergrads per year.
Engineering Undergrad Courses: The Engineering Undergrad Courses that benefit in the use of the equipment are:CE 375and CE 472, ENV 330, 375 and 275.

Description of Proposal:

This proposal is configured in two parts as it is an instrument of significant value. The total system consists of a an Ion Chromatographic instrument equipped to quantitate Total Anions and Cation. Part#1 consists of the purchase of Software, Autosampler and hardware to determine Cations. A future proposal 2011 to obtain Part #2 which consists of the purchase the hardware to determine Anions.

Proposal Benefits:

This instrument would provide for the simultaneous analysis of Anions and Cation. It is capable of low level analysis(ug/L). It will process a sample within 30min. thereby reducing wait time for analysis results(next day).

The instrument will reside in the Water resoures teaching lab DWE-3506. It will be available to a undergrads in CE 375and CE 472, ENV 330, 375 and 275 and the various student project groups equipment(ie, WERC engineering design).

Estimated Equipment Lifetime:

This instrument life time is expected to be approx 15 yrs.

Cost Breakdown:

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

Item	*Option #1*	*Option #2*	*Option #3*	*Option #4*
ICS-1100	$19,252.00	$0.00	$0.00	$0.00
CS14-Column	$1,360.00	$0.00	$0.00	$0.00
CG14-Guard	$518.00	$0.00	$0.00	$0.00
CSRS-300	$935.00	$0.00	$0.00	$0.0
AS-DV	$8,330.00	$0.00	$0.00	$0.00
Softwarel, & Installation,Freight	$8,532.00	$0.00	$0.00	$0.00
TOTAL:	$38,727.00	$ 0.00	$ 0.00	$ 0.00

Implementation Schedule:

The planned implementation is 4 weeks from the purchase date.

Title: E&CE Laboratory Monitor Upgrade

Submitted Fall 2010 By:

Your Name: Eric Praetzel E-mail: praetzel@uwaterloo.ca Phone#: x35249

Department: Electrical and Computer Position: Lab. Staff, Hardware Specialist

Description of Proposal:

I propose to replace 1998/2000 vintage 17”/19" monitors in the Fourth Year Projects Lab (E2-3339), Circuits lab (E2-3344, E2-3346) and Controls lab (CPH-3682).

Proposal Benefits:

This directly benefits courses using the FYDP, Microwave, Robotics and Circuits labs as well as reducing University power use, and heat generated in the labs.

Estimated Equipment Lifetime:

7 to 12 years based upon past experience.

Cost Breakdown:

22” LED LCD Monitors: $210 ea

Total – any amount up to $4,200 (20 LCDs), ideally 5 minimum ($1050)

Implementation Schedule:

December 2010

Additional Information:

The Controls lab, 10 stations, currently uses 17” CRTs from 1998 and class reps have told us that they'd like something better than the "fuzzy old monitors". That room hosts the ECE481/484/486 labs.

The FYDP (Fourth Year Design Symposium) lab equipment, 10 stations, is used for the yearly FYDP Symposium. Having LCDs in that room would make them available for the yearly symposium and reduce LCDs pulled out of working 1st/2nd/3rd year labs.

The Circuits lab (E2-3344, E2-3346), 46 stations, is primarily 10 year old 19” CRTs with some 1998 vintage CRTs.

Each such upgrade of a CRT to an LCD would save about $45/year in electricity. The 10 year old 19” CRTs are starting to have failures in their power saving circuitry and their power draw is then around $90/yr more than a LCD would be. Note the monitors quoted use LEDs for the back light and use 40% less power than regular LCDs at a minor increase in price.

I look forward to any suggestions ECE Reps have for where to locate these LCDs. My first priority will be to upgrade the Controls lab, lastly the Circuits and FYDP labs.

Priority:

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

Title: E&CE Lab Computer CPU Upgrade

Submitted Fall 2010 By:

Your Name: Eric Praetzel E-mail: praetzel@uwaterloo.ca Phone#: x35249

Department: Electrical and Computer Position: Lab. Staff, Hardware Specialist

Description of Proposal:

While newer computers would offer some benefit in the ECE "digital" labs I propose something cheaper.

I propose to do a shuffle upgrade of CPUs. WEEF purchased 3.1GHz CPUs would replace the 2.6GHz ones which would then replace the 2.2GHz ones.

Proposal Benefits:

The 3.1GHz CPUs are 16% faster than the 2.6GHz ones allowing for a slightly faster compile times. The 2.6GHz CPUs would then replace the 2.2GHz ones which would give a 15% speed up.

The CPU upgrade would slightly reduce power draw and provide a speedup for the simulations (which take up to 30 minutes) and compiles (30 seconds to 1 minute) for ECE 327 and ECE 124/223 - core ECE courses.

Estimated Equipment Lifetime:

5 to 8 years based upon past experience.

Cost Breakdown:

3.1GHz dual-core AMD CPUs $91 ea

Total – Any amount up to a max of 30 ($2,730)

Implementation Schedule:

December 2010

Additional Information:

There are seven 2.2GHz computers in E2-2364 which could be upgraded and another 23 in E2-2363.

The E2-2363 lab is used for ECE 222, 254, 354, 350, 355, 423, 455.

Priority:

Low (would be nice – but the improvement isn't earth shattering)

Title: E&CE Nexus Computer Upgrade

Submitted Fall 2010 By:

Your Name: Eric Praetzel E-mail: praetzel@uwaterloo.ca Phone#: x35249

Department: Electrical and Computer Position: Lab. Staff, Hardware Specialist

Description of Proposal:

I propose to replace the old Pentium IV computers CPH-3682 Robotics lab with new computers to address performance and comfort issues.

Proposal Benefits:

Software will run 2x faster and new computers will use about 75% less electricity. The new computers will be capable of running Windows 7 when that upgrade is required.

Computer systems like these are responsible for 1/3 of the total heat generated within an ECE laboratory and so replacing Pentium IV's is an easy way to reduce room heating and electricity use - saving the university money.

Estimated Equipment Lifetime:

5 to 8 years based upon past experience.

Cost Breakdown:

3.1GHz dual-core AMD computers with 2G RAM: $475ea (taxes included)

Total – Ideally $4750 (Robotics lab) but any amount of funding (in increments of $475) will be appreciated.

Implementation Schedule:

December 2010

Additional Information:

The Controls lab has 10 Pentium IV computers and is used by ECE481/484/486.

Each lab station uses a 1998 vintage 17" CRT monitor. Upgrading those is another proposal.

Priority:

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

Title:

Ece Lab Equipment For The Circuits And Devices Courses.

Submitted By:

Name: Paul Hayes E-mail: phayes@ece.uwaterloo.ca Phone Number: ext 33969
Team/Department: ECE Dept. Position: Lab Instructor
Room/Building Location of Equipment: E2-3347.
Approximate Number of Undergrad Use: 250.
Engineering Undergrad Courses: ECE 231,332, NE242.

Description of Proposal:

The Model 7200 Capacitance meter is used to measure the capacitance in PN junctions and MOS capacitors. These concepts are important in the understanding of Transistors and Diodes. There is a lot of research done to reduce these capacitances to increase the freqency of our computer systems. .

Proposal Benefits:

The students will be learning important concepts about the limitations of electronic devices. We are using two new units now. These were purchased in previous terms by WEEF. We are still using four older units that are at the end of their life.

Estimated Equipment Lifetime:

Boonton 7200 Capacitance Meter will last 15 years. .

Cost Breakdown:

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

Item	*Option #1*	*Option #2*	*Option #3*	*Option #4*
Boonton 7200 Capacitance Meter	$10,000.00	$5,000.00	$3,000.00	$2,000.00
	$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	$0.00
TOTAL:	$10,000.00	$5,000.00	$3,000.00	$2,000.00

Implementation Schedule:

These units will be in use as soon as they arrive at UW.

Additional Information:

Insert any additional information here.

Title:

Time-Efficient, User-Friendly Simulation Package For Power Electronic Cirsuits

Submitted By:

Name: Mehrdad Kazerani E-mail: mkazeran@ecemail.uwaterloo.ca Phone Number: Ext. 33737
Team/Department: Department of Electrical & Computer Engineering Position: Professor
Room/Building Location of Equipment: Software to be installed on U of W system for everyone's use
Approximate Number of Undergrad Use: 90 ECE463 students (ECE & MME), 10 4YDP teams (ECE)
Engineering Undergrad Courses: Now: ECE463 (ECE & MME); in future: ECE463 (ECE) and MTE420 (MME)

Description of Proposal:

It is proposed here to purchse the latest version of the power electronic circuit simulation software PSIM to be installed on the U of W system and be used by undergraduate students who are having projects in power electronics (e.g., ECE 463 students and 4YDP teams).

Proposal Benefits:

A large number of students, especially those who take ECE 463 (and MTE 420 in the future) will benefit from the proposed simulation software. The class of power electronics in ECE (ECE463) has grown from 6 students in 1997 to over 70 students in 2010. A new forth-year elective course on power electronics (MTE420) has been delivered to MME students with 10-20 students in the past few years. This number is expected to grow in the future. These students are assigned computer-aided design projcets in power electronics. The U of W already has a license for a 15-user PSIM software. The existing software is version 6.0, whereas the latest version available is 9.0, with a lot of additional features and modules that will facilitate simulation of power electronic circuits. The 4YDP teams working on power electronics-related projects will also benefit from this software, as some of them use the software to verify the correctness of their ideas and designs before making a prototype. An annual maintenance contract is optional, but not required. Everyone who has an account on NEXUS can be given access to the software. The proposed software is a 20-user version without maintenance contract.

Estimated Equipment Lifetime:

The software will work indefinitely and should be upgraded in a few years.

Cost Breakdown:

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

Item	*Option #1*	*Option #2*	*Option #3*	*Option #4*
PSIM Pro 9.0 Renewable Energy (RE) Combo Package	$10,000.00	$10,000.00		
Thermal Module	$1,700.00	$0.00		
TOTAL:	$11,700.00	$10,000.00	$ 0.00	$ 0.00

Implementation Schedule:

Purchasing date: As soon as possible, preferably in early January, 2011. Installation date: As soon as the software is received.

Title: Power – Control Electronics – Additional Equipment to complete three stations

Submitted By: Ed Spike, Laboratory Instructor
spike@uwaterloo.ca x33716 or 33815

Team/Department: ECE Dept

Description of Proposal:

To add power electronics equipment in order to improve a smoother deployment of the learning experience, and to improve the timing of delivery; while studying the speed, voltage and current feedback control of power electronics. Open-loop and closed-loop control system applications can be studied with more workstations. Some labs have to start before the material is lectured.

Proposal Benefits:

Increase of stations from 7 to 10: The MTE-320 course scheduling and deployment requires up to 54 group scheduled working stations: 54groups/10stations/day = 6 days to deploy. Decrease the number of undergraduate-students per station from 4 to 2. Useful for courses ECE362, ME 269, (F, W), ECE463/MTE420 (S,F) and MTE320. Needed for use in S-2011 (if in time). Total number of students to be benefited: ECE362 (84+84 F, W terms), ME269 (126+108 for F, W terms) ECE463/MTE420 (40 + 20) and MTE320 (116): For 576 students yearly. ECE/MME funding has helped with further expansion of basic non-control experiments.

Cost Breakdown:

Item	Option #1	Option #2	Option #3	Option #4
5 PID controllers $1310.00	6,550	(5of) 6,550	6,550	6,550
4 Power Thyristors + 4 Thyristor Firing Units $2138	8,552	(4of) 8,552	8,552	2,138
2 Tadem Rheostats + 2 Inertia Wheels $921	1,842	(2of) 1,842	921	0
4 Voltage/Current Isolator $500	2,000	(2of) 1,000	1,000	1,000
	0	0	0	0
1 Smoothing Inductor $1310	1,310	(1of) !,310	0	0
TOTAL:	$20,254	$16,634	$16,102	$9,688

Implementation Schedule:
-Send the PO in Nov 2010. Equipment delivery on Jan to Feb 2011. Shipping cost by ECE.
- Option #2 will complete 3 stations for MTE-320:Additional for ECE463:MTE420/ECE362/MTE320
- Option #3 will complete 2 stations for MTE-320:
- Option #4 will complete 1full + start on the rest of the stations for ECE463:MTE420/ECE362/MTE320
Additional Information: Quotation was obtained.

Contact Information for funding if different tan above:
Name of Alternate: Gannayya Bomalli, Lab Instructor / Carmen Caradima Lab Instructor
E-Mail: gbommali@uwaterloo.ca / cmcaradi@ecemail.uwaterloo.ca
Phone Number: x33815 / x33003

Title:

Blackboards For Room E2-3352

Submitted By:

Name: Peter Xian
E-mail: pzyxian@uwaterloo.ca
Team/Department: Electrical Engineering [ECE]
Position: 3B Student

Description of Proposal:

This is a proposal topurchase and install 2 more blackboards in E2-3352 [Second & Third Year Student Lounge].

Proposal Benefits:

Often in time students host brainstorming or group study sessions in the E2-3352 the student lounge. However, there were only two small blackboards. It is difficult to share and to write down ideas for discussion. More black boards will facilitate group communication and solve board sharing problems.
E2-3352 is a password secured room such that the blackboards can stay safe from strangers. The blackboard will serve their purpose for idea sharing. The blackboards generally don't require maintenance other than regular chalk dust removal.
This lounge is accessible to second and third year students which are 4 classes in total. The benefits are monumental for idea sharing and discussions among students for different projects or interests.

Estimated Equipment Lifetime:

Option 1:
From Staples:
Quartet Black Chalkboard, 48" x 96"
Quartet Black Chalkboard, 48" x 72"
The blackboards will serve second and third year students for almost as long as the one in the lectures last. [pretty much forever]
Option 2:
Purchase blackboards through university, which might be able to result in lower cost. Cost is unknow at the moment.

Cost Breakdown:

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

Item	*Option #1*	*Option #2*	*Option #3*	*Option #4*
Quartet Black Chalkboard, 48" x 96"	$245.54	$0.00	$0.00	$0.00
Quartet Black Chalkboard, 48" x 72"	$186.52	$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:	$ 432.06	$ 0.00	$ 0.00	$ 0.00

Implementation Schedule:

Will purchase as soon as the funds are available and install as soon as they are bought

Additional Information:

University might be able to purchase blackboards for cheaper through bulk buy.

Title:

Lab Development For MTE460, Mechatronic System Integration

Submitted By:

Name: Dana Kulić E-mail: dkulic@ece.uwaterloo.ca Phone Number: x37260
Team/Department: Elec & Comp Eng Position: Assistant Professor
Room/Building Location of Equipment: E2-2103G
Approximate Number of Undergrad Use: 25 students in first year, expanded to 50 thereafter
Engineering Undergrad Courses: MTE460

Description of Proposal:

MME and ECE are developing a new senior undergraduate course in mechatronics, MTE 460, mechatronic system integration. The course will consist of lecture units covering typical mechatronic systems found in industry, but to which the students may not have had sufficient exposure in earlier courses. In particular, lectures will focus on interface design, PLC controllers, automation safety, HMI, machine vision, networked communications and control, discrete systems, and fault finding and system integration. A key focus of the course will be a significant laboratory component, where students will, over the course of the term, commission a large industrial part assembly system. In the early weeks of the course, students would focus on designing, implementing and debugging the system components, while in the final weeks the students would integrate the various subsystems to implement the entire system. We have purchased an industrial solenoid valve assembly system, consisting of 3 stations with a variety of pick and place, part detection, part movement and part inspection subsystems. This proposal seeks additional equipment to (1) provide equipment missing from the current setup to enable full operation of the basic system, (2) a pair of mobile manipulators to enable additional laboratory exercises in mobile manipulator planning, control and integration and enable fully autonomous operation of the system. In this proposal, we seek funding for item (1), we plan to request funding for item (2) in a future proposal.

Proposal Benefits:

This funding would support the establishment of a significant new mechatronic lab, which would give students hands-on experience with large-scale mechatronic systems, and enable them to apply practical knowledge gained in a large variety of topics, including control, machine vision, networked communication, PLCs, and software. In addition, the large scale integration nature of the lab would give students the experience on working on interfacing, integration and issues with designing, commissioning and debugging large automation systems, which are not addressed in any existing labs.

Estimated Equipment Lifetime:

Please see the table below for the list of equipment. The equipment is expected to last at least 10 years.

Equipment	Description	Unit Cost	Num Units	Cost	Option 1	Option 2
Supervisory Controller PC	PC for running the supervisory DeviceNet network and communication/control of the stations	$1,000.00	1	1,000.00	X	X
Supervisory Controller DeviceNet card	Master/Slave NI PCI-DNET card	$1,246.50	1	1,246.50	X	X
Local PLC Controller	Individual station controllers, Beckhoff BC5250 and accessories	$ 392.63	3	1,177.89	X	X
Local PLC Programming Kit + Cabling	Software and interfacing for programming the local controllers	$ 645.89	1	645.89	X	X
Inspection Camera	NI SmartCamera, power supply and lens	$2,466.00	3	7,398.00	X	X
Inspection Camera PC	PC for running vision algorithms on each test station	$1,000.00	3	3,000.00	X	
Miscellaneous	Connectors, Mounting, Wiring, Assembly part design and manufacturing	$3,000.00	1	3,000.00	X	X
	Subtotal				17,468.29	14,468.29
	Tax				2,270.88	1880.88
	TOTAL				19,739.17	16,349.17
	Funding from ECE department				10,000.00	10,000.00
	Funding requested from WEEF				9,739.17	6,349.17

Implementation Schedule:

We intend to purchase the equipment as soon as the grant is approved, and start commissioning the system in January 2011. The first offering of the course is scheduled for September 2011.

Additional Information:

The ECE department has agreed to contribute $10,000 to the project if funding is approved.

Contact Information for funding if different than above:

Same as above.

Title:

Thin Sections For The Earth 232 Laboratory Sessions

Submitted By:

Name: Katherine L. La Hay E-mail: klahay@uwaterloo.ca
Team/Department: Earth Science Position: Laboratory Instructor

Description of Proposal:

Geological Engineers are required to take Earth 232, a microscope course. We need new thin sections for the labs..We need to refurbish sets of thin sections for the metamorphic and igneous rocks as well as for the mineral identification lab session. At the minimum we need one set of slides for every 2 students. At the least we need to refurbish 10 sets of slides.

Proposal Benefits:

The majority of the thin sections are over 20 years old. They are slowly deteriorating due to old age (and certainly not to misuse). During the lab sessions the students study a selection of thin sections. Some of those collections are missing pertinent slides. New slides would enable the students to work through the labs without having to wait for another student to finish with the required slide. New slides would simply look better. The better the collections look the better the students (and the instructor) feel about using them. The collections are used by the Earth Students as well. The students have ready access to both the microscopes and thin sections during their free time. Include a description of storage/security conditions, maintenance requirements, and what will happen to the equipment once the project is completed. Also list other teams/groups/classes who will have access to the equipment.

Estimated Equipment Lifetime:

These thin sections last for decades. Many of the current slides are 20 years old. New slides will last as long.

Cost Breakdown:

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

Item	*Option #1*	*Option #2*	*Option #3*	*Option #4*
200 thin sections @ approx $20 each	$4,000.00	$0.00	$0.00	$0.00
100 thin sections @approx. $20 each	$0.00	$2,000.00	$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:	$4,000.00	$2,000.00	$ 0.00	$ 0.00

Implementation Schedule:

The thin sections would be ordered as soon as possible. I need to cut the rocks and send the rock samples out of province for manufacturing of the thin sections. It will take me about 2 to 3 weeks to cut the rocks samples. Depending upon the petrological company the thin section manufacture would take 6 to 12 weeks. The new slides need to be checked, labelled, and put in the collection. That'll take a few weeks. If all goes well the new slides would be ready for the spring 2011.

Title:

Conveyor Material Handeling System For New Management Engineering Laboratory

Submitted By:

Name: *Ada Barlatt* E-mail: *abarlatt@uwaterloo.ca* Phone Number: *x38789*
Team/Department: *Management Sciences* Position: *Assistant Professor*
Room/Building Location of Equipment: *CPH 3681*
Approximate Number of Undergrad Use: *All Management Engineering students and some Management Sciences option students*
Engineering Undergrad Courses: *The planning for the Management Engineering lab is ongoing, thus the list of classes that will use the lab (and the conveyor system within the lab) is not finalized. The lab planning committee has created a list of courses that will definitely use the lab and a list of courses that could potentially use the lab, however, this list may grow in the future.*

The courses that will definitely use conveyor system in the lab are:

1) MSci 131 Work Design and Facilities Planning,
2) MSci 334 Production Planning and Inventory Control, and
3) MSci 432 Production and Service Operations Management.

The courses that could potentially use the conveyor system in the lab are:

1) MSci 100 Management Engineering Concepts,
2) MSci 342 Principals of Software Engineering,
3) MSci 343 Human Computer Interaction,
4) MSci 401 Management Engineering Design Project 1, and

Description of Proposal:

This proposal is for funding for a conveyor material handling system to be purchased and installed in the new Management Engineering undergraduate laboratory. This conveyor system is the fundamental platform upon which this new lab will be built. All other elements within the lab will be complementary to the conveyor system or built around it. The conveyor system will be used during labs for several different courses in the undergraduate program.

Proposal Benefits:

Benefits: A conveyor system in the Management Engineering laboratory will provide several significant benefits to the undergraduate Management Engineering program. First, the conveyor system in the lab will allow students to put in to practice the theory discussed during lectures. Second, the conveyor system will allow students to perform experiments and participate in simulations in a variety of areas throughout the program including: material handling systems analysis, time study and work measurement, line balancing, facility design, ergonomic analysis, production line design, and inventory management and control. Third, the conveyor system will allow students to gain experience operating and designing with industry equipment.

Storage/security conditions, maintenance requirements and access to equiptment: The conveyor system will be installed and stored in the Management Engineering

laboratory. A key will be necessary to enter the lab facility. The lab planning committee has selected equipment that requires limited maintenance. Moreover, the manufacturer provides preventative maintenance for the equipment. The Department of Management Sciences will be hiring a lab technician to coordinate the maintenance for the equipment within the lab. All Management Engineering students and Management Sciences option students that select MSci 432 as an elective will have access to the lab. Students will need to be supervised by a course instructor, teaching assistant or the lab technician when using the conveyor system.

Estimated Equipment Lifetime:

The conveyor system has four components. One belt conveyor, one roller conveyor and two flexible conveyors. The belt conveyor and the roller conveyor will be parallel to each other and the flexible conveyors will be used to connect the belt and roller conveyor in either a "U" shape or a closed loop. This configuration will allow for a wide variety of lab activities for the students. The expected lifetime of each conveyor is 20 years.

Cost Breakdown:

For each component in the conveyor system the four options represent four different configuruations. Option #1 includes conveyors with the most features (e.g., motor driven) , and Option #4 includes conveyors with the fewest features (e.g. gravity "powered") .

Item	*Option #1*	*Option #2*	*Option #3*	*Option #4*
Belt Conveyor	12661	11993	11326	10658
Roller Conveyor	8140	6805	3642	2307
Two Flexible Conveyors	9628	7569	6540	4924
	$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:	$30,429.00	$26,367.00	$21,508.00	$17,889.00

Implementation Schedule:

The plan is that the conveyor system will be installed and operating for the opening of the new lab in May 2011. The proposal for funding is being submitted now to allow for the manufacturing and delivery of the conveyors. The lab room is currently graduate student offices for students in another department. The room is expected to become available to the Department of Management Sciences during January 2011. Room renovations will occur January 2011 through April 2011.

Additional Information:

We are working with Rolmaster Conveyors in Cambridge for this order.

Contact Information for funding if different than above:

Name: *Carol Smith* E-mail: *csmith@uwaterloo.ca*
Position: *Administrative Assistant* Phone Number: *x32150*

Title:

Optitrack Indoor Positioning System For Me597 And The Student Design Center

Submitted By:

Name: Prof. Steven Waslander E-mail: stevenw@uwaterloo.ca Phone Number: x32205
Team/Department: MME/UWMAV/WARG Position: Assistant Professor
Room/Building Location of Equipment: E5 3014, Student Design Center
Approximate Number of Undergrad Use: 50/year
Engineering Undergrad Courses: ME 597 Autonomous Mobile Robotics

Description of Proposal:

This proposal is to acquire a 3D Optitrack indoor positioning system to be setup in the Student Design Center (SDC) in E5. This system will primarily be used for running robotic algorithms on various platforms in situations where using outdoor GPS systems is inappropriate or infeasible due to inclement weather and/or accuracy requirements. The Optitrack system uses IR technology to provide an "Indoor GPS" service that determines position, velocity and orientation of any vehicle in its capture zone. The proposal calls for acquiring upto six IR emitters and cameras, a full set of IR reflectors to be placed on platforms, related computing systems and related equipment for mobility and storage.

Proposal Benefits:

This system will be used by undergraduate students (over 20 per year) taking ME597: Autonomous Mobile Robots to run various laboratory studies in robotic control. An Optitrack system will allow the students to focus on developing control algorithms without having to worry about intermittent or low quality GPS signals and/or bad weather conditions. Furthermore, the system will be used by the Waterloo Aerial Robotics Group and the University of Waterloo Micro-Air Vehicle Team who will use its full body motion information to design better flight systems, and aerial vehicles for their various competitions. This will allow these teams to focus on the design of better vehicles and control algorithms and also help validate their motion analysis algorithms. These student clubs have an undergraduate involvement of over 50 students per year. These items will be stored in portable packages with dedicated computing equipment and storage cart. This will allow the system to be transported to a variety of environments (SDC Foyer, PAC Gym etc.). Prof. Waslander will manage allocation of the system to the course and teams, and will make sure this equipment is safe and trackable throughout the year. When not in use, the system will be stored in a secure SDC storage area.

Estimated Equipment Lifetime:

The equipment will be used by over 50 undergraduate students each year. Most of the support equipment (cabling, software etc.) can be used for well over 10 years. The IR cameras and Computing hardware may need upgrades or replacements within 5-10 years depending on wear and tear.

Cost Breakdown:

The two main options are a 6 camera system and a 3 camera system. The 3 Camera system is sufficient for ground vehicles (used by the ME 597 students), while the 6 camera system is needed for aerial vehicles (WARG/UWMAV). An option to postpone the purchase of supporting hardware is also included.

Item	*Option #1*	*Option #2*	*Option #3*	*Option #4*
Optitrack 6 Camera System	$7,309.00	$7,309.00	$0.00	$0.00
Optitrack 3 Camera System	$0.00	$0.00	$4,304.00	$4,304.00
Supporting Hardware (Tripods, PC, Storage Cart)	$2,125.00	$0.00	$2,125.00	$0.00
Educational Discount	($625.00)	($500.00)	($375.00)	($250.00)
HST	$1,145.17	$885.17	$787.02	$527.02
	$0.00	$0.00	$0.00	$0.00
TOTAL:	$9,954.17	$7,694.17	$6,841.02	$4,054.00

Implementation Schedule:

As the funding is approved by WEEF a local area distributor of Optirack Systems (Clearpath Robotics) will be contracted to provide and install these systems in the SDC. The system should be ready for use by the students in the Winter 2011 term

Title:

Engine Dissasembly Lab

Submitted By:

Name: Sanjeev Bedi E-mail: sbedi@uwaterloo.ca Phone Number: x32178
Team/Department: MME Position: Professor
Room/Building Location of Equipment: E5
Approximate Number of Undergrad Use: 360
Engineering Undergrad Courses: MTE-100, ME-100

Description of Proposal:

We would like 40 small engines and a test bed for a 1st year disection lab

Proposal Benefits:

We ran a disection lab for the first time this past term with great success. For this first time we used bicycle components and found them to lacking in complexity. For the next run of this lab we'd like to use real engines that will be dissasembled, inspected, reasembled, and then run.

Estimated Equipment Lifetime:

We expect the engines to last for at least 10 labs

Cost Breakdown:

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

Item	*Option #1*	*Option #2*	*Option #3*	*Option #4*
40 engines	$4,000.00	$0.00	$0.00	$0.00
1 comparison engine	$400.00	$0.00	$0.00	$0.00
4 test stations	$10,000.00	$0.00	$0.00	$0.00
4 computers	$4,000.00	$0.00	$0.00	$0.00
	$0.00	$0.00	$0.00	$0.00
	$0.00	$0.00	$0.00	$0.00
TOTAL:	$18,400.00	$ 0.00	$ 0.00	$ 0.00

Implementation Schedule:

This will be used in the fall 2011 term

Additional Information:

The department is willing to contribute up to $9200 to match the WEEF funding.

Title: Multimedia equipment for SYDE E5 classrooms

Submitted By:

Name: Tariq Naqvi
E-mail: tnaqvi@engmail.uwaterloo.ca
Phone Number: X35218
Position: Lab Instructor

Description of Proposal:

Recently the department of Systems Design Engineering has moved to a new Engineering 5 (E5) building space. In order to create modern state of the art facilities within our four (4) new E5 classrooms, we are seeking WEEF funding to install multimedia equipment in three (3) of the anticipated most heavy use class rooms. We are asking WEEF to fund new data projectors, projection screens, DVD players, PC consoles and sound equipment to provide modern multimedia capabilities in these classrooms. This equipment will be housed in new customized podiums being provided by the faculty of Engineering.

Proposal Benefits:

Implementation of this proposal will benefit all Systems Design Engineering undergraduate students and will enhance undergraduate learning experience by enabling the use of more interactive content during SyDe lectures and tutorials. Systems Design Engineering classrooms are heavily used during all three terms. It is expected that this proposal will benefit more than 600 students during a year.

Cost Breakdown:

Description	Quantity	Unit Cost	Total Cost
Data Projector Screens - 8 Feet	4	$170	$680
Data Projector + mount	4	$1350	$5,400
Audio Amplifier + Speakers	3	$700	$2,100
Blue ray DVD Player	3	$200	$600
PC	3	$600	$1,800
Podiums	4	$1000	$4000
Total project cost			**$14,580**
SYDE Department Contribution			$1,520
Faculty of Engineering Contribution			$4,000
Requested WEEF contribution			**$9,060**

Systems Design Engineering is providing funding for Data Projector and Projection Screen for our 4th E5 class room. Faculty is providing funding for Podiums in 4 classrooms.

Implementation Schedule:

Immediate.

Title:

Engineering Orientation

Submitted By:

Name: Sean O'Neill E-mail: foc@engmail.uwaterloo.ca
Team/Department: Engineering Orientation Position: Engineering Federation Orientation Committee

Description of Proposal:

Engineering Orientation is requesting funding for equipment and materials for events during the week. Specifically this year FOC is looking for ways to improve communication between it's team members. This includes replacement of aged and broken megaphones and purchasing new radios for direction of our incoming first years as well as inter-leader communication over long distances. Last year we purchased 6 radios and a base station with donations from WEEF. This year we hope to add to that set with another 6 radios.

Proposal Benefits:

Engineering Orientation is a time that new students are introduced to the University of Waterloo. The new students are transitioned into their role as young adults with the guidance of returning upper year students. This is also a time when the incoming students get to discover their new home, the city of Waterloo, and the opportunities it has to offer them. This is an extremely memorable and exciting time for first years. The purchase of this equipment will help our student leaders communicate more effectively with first years via mass public address. It will also help leaders be more organized through faster and easier direction from FOC via radio. During Orientation Week we have over 1400 up and coming engineering students as well as over 400 student leaders as a part of the total student population on campus of 25000. This is a great occasion to expose WEEF to all of these new and returning students.

Estimated Equipment Lifetime:

Orientation will be using these pieces of equipment yearly for as long as they are in working order, at least 10 years at the minimum. This includes open house days, conferences, and tour days. Regular cleaning and proper storage guidelines will be followed as directed by product manuals. Everything will be stored securely in a locked storage unit when not in use. This equipment will be available for sign-out use by the Engineering Society and student teams upon request.

Cost Breakdown:

6 Motorola Two-Way CP-200 Radios from Spectrum Communications in Kitchener + Charging Station.

Item	*Option #1*	*Option #2*	*Option #3*	*Option #4*
6 Radio CP200 Radio Set + Charger	$3,110.03		$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	$0.00
TOTAL:	$3,110.03	$ 0.00	$ 0.00	$ 0.00

Implementation Schedule:

Radios will be ordered online from a local vendor Spectrum Communications, who gives the best deal.

Additional Information:

WEEF will also be integrated into the week similar to previous years, with the WEEF logo on frosh t-shirts, WEEF stickers in frosh kits, and distributed to students where possible as well as through verbal recognition, etc.

Contact Information for funding if different than above:

Name: Insert Name Here
Position: Insert Position Here

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

Title:

Request For Funds For Waterloo Rocketry Team Supplies

Submitted By:

Name: Aareet Shermon
E-mail: wrt@engmail.uwaterloo.ca
Phone Number: 519.589.1971
Team/Department: Waterloo Space Society/ Waterloo Rocketry Team
Position: Business Team Lead
Number of Team Members: 75
Percent of Members in Undergrad Engineering: 90

Description of Proposal:

The "Waterloo Rocketry Team - Rocket Team Supplies" proposal is a fundamental donation to the Waterloo Rocketry Team. The Waterloo Rocketry Team, will enter a team into the 2011 Intercollegiate Rocket Engineering Competition (IREC) held by Experimental Sounding Rocket Association (ESRA). The IREC will be in its 6th year, and university students enter the competition by designing and building a sounding rocket. This proposal requests funding to support acquisition of computer and control equipment for the rocket, sensors, servos and equipment, electronic power circuit boards, mechanical parts, chemicals, and batteries etc.

Proposal Benefits:

Benefits for UW engineering faculty/ students:
1) UW engineering exposure in rocketry, scientific/engineering community on an international level.
2) Provide a stage for UW students to compete with international universities.
3) Continuous Engineering design project - intention to enter annually.
4) Students will gain a wide spectrum of valuable learning and design experience/skills: problem solving, engineering researching (physics, chemistry, control systems, aerodynamics, etc), software modelling, simulation, electronic and mechanical design/manufacturing/assembly, components implementation and integration, and system debugging.
5) Designing for high atmosphere applications, an area UW does not currently do a lot of work in
6) Team environment skills: team participation, leadership, mentorship, financial planning (sponsorship, costing, negotiating prices)

Estimated Equipment Lifetime:

Micro Controllers: No damage is expected to occur to these during flight. These will be reused in rockets built for competitions when we enter in subsequent years. - Estimated life - 2 years
Sensors/Servos/Controls/Altimeters: No damage expected - Estimated life - 2 years
Circuit boards, wiring - Depending on testing, may require new parts for modifications - Estimated life: 1 year
Batteries: Will need to be frequently replaced - Estimated life: 3 months
Fuel Chemicals: Expected to last for one competition and all associated testing - Estimated life: 1 year
Mechanical parts: Some repairs/modifications may be necessary, however base cost will be a one-time investment for a significantly long period - Estimated life - 2 years

Cost Breakdown:

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

Item	*Option #1*	*Option #2*	*Option #3*	*Option #4*
Micro Controllers	$300.00	$150.00	$100.00	$0.00
Sensors/Servos/Controls/Altimeter(s)	$1,000.00	$800.00	$600.00	$0.00
Hardware(Circuit boards, Batteries, so on)	$200.00	$150.00	$100.00	$0.00
Fuel Chemicals	$400.00	$300.00	$250.00	$0.00
Mechanical Parts(Chassis, Launch pad, etc)	$1,600.00	$1,300.00	$1,100.00	$0.00
				$0.00
TOTAL:	$3,500.00	$2,700.00	$2,150.00	$ 0.00

Implementation Schedule:

Summer 2010: Design and initial testing stage: start the development of the control system, a propulsion system and the general design of the rocket, begin preliminary testing/debugging.
Fall 2010: Finalize a design, and continue with testing and debugging. Develop the technical documents required for the competiton. Continue with rocket building.
Winter 2010: Complete Rocket build and ensure competiton readiness. Prepare for travel accomodations and arrangements for getting to competition

Additional Information:

The IREC takes place in the desert states in the USA. In 2009, five American Schools entered into the competion. 2011 is set to be the first year where schools from other countries will compete. So far uWaterloo and École Polytechnique de Montréal have expressed interest in competing in 2011. The competition is funded by major companies in the space exploration and utilization field. This is the most publicized university-level sounding rocket competion of its kind in North America.

Title:

Concrete Toboggan - Design And Construction

Submitted By:

Name: Marc Tan
E-mail: uw-gnctr-2012@googlegroups.com
Phone Number: 519 729 8370
Team/Department: GNCTR 2012
Position: Weef Proposal Submitter
Number of Team Members: ~25
Percent of Members in Undergrad Engineering: 100%

Description of Proposal:

The Great Northern Concrete Toboggan Race Team (GNCTR) requires funding to cover the testing and construction costs for our concrete toboggan which will compete in the 2012 nationwide GNCTR competition in Ottawa, Ontario. We would like to request WEEF to assist our team with the funding. Further cost overruns in construction and testing, travel lodgings, and transportation will be paid through our currently ongoing fundraising efforts.

Proposal Benefits:

This team is run primarily by UW Civil Engineering students however students from mulitple other departments have shown interest, especially mechanical and nanotechnology engineering because of their interests in concrete materials design and brake system design. The project provides an opportunity for engineering students to practice and apply the methods and concepts learned in class. Since the goal is to participate in and win the concrete toboggan race, this initiative has the ability to direct a large amount of recognition to the University of Waterloo at the competition. This is a completely student run team and will show the success and innovation of Waterloo Engineering students at a national competition level. The more funding given towards construction, the more members we can send to the compeition, which in turn would show the benefits and uniqueness of WEEF at the University of Waterloo in aiding in student team projects.

Estimated Equipment Lifetime:

The concrete toboggan will be constructed during the Spring term of 2011, hence the construction costs will be highest during that term. The concrete toboggan race is planned to take place during the Winter of 2012 in Ottawa. It is our plan to coordinate with the subsequent GNCTR team of 2013 and 2014 in order to share our learning and transfer our equipment to them furthering the equipment lifetime of the testing equipment to its design life.

Cost Breakdown:

Since the construction has not yet commenced, we are uncertain as to the precise costs; however we have reason to believe that the cost outline below is a reasonable estimate and request. In fact, the costs will likely be much higher then what is outlined below. This is why Option #2 would be recommended since cost overruns will only be able to be covered by our fundraising which is intended to pay for attending the competition.

Item	*Option #1*	*Option #2*	*Option #3*	*Option #4*
Concrete Testing and Construction	$350.00	$450.00	$250.00	
Steel Frame Testing and Construction	$500.00	$700.00	$400.00	
Steering System Testing and Construction	$300.00	$400.00	$200.00	
Braking System Testing and Construction	$350.00	$500.00	$200.00	
Fundraising Materials	$100.00	$150.00	$50.00	
TOTAL:	$1,600.00	$2,200.00	$1,100.00	$ 0.00

Implementation Schedule:

Fall 2010- Begin research and design of the concrete toboggan.
Summer 2011 - Complete the design and begin construction.
Winter 2012 - Final preparations and competition.

Title:

UW ASIC Team – VHDL/Verilog Reference Guides

Submitted By:

Name: Kartik Vamaraju E-mail: kvamaraj@uwaterloo.ca Phone Number: 226.747.5720
Team/Department: UW ASIC Team Position: Co-Leader - AllSparc
Total Number of Team Members: 30
Number of Team Members in Undergraduate Engineering: 30 (100% in Engineering)

Description of Proposal:

The UW ASIC Team is seeking support for the acquisition of Doulos reference guides for the hardware description languages VHDL and Verilog to complement our tutorials and to improve productivity and code quality during ASIC project design sessions.

Proposal Benefits:

As of Fall 2010, the UW ASIC Team is currently offering tutorials to attain proficiency in the hardware description languages VHDL and Verilog. Verilog training is offered nowhere else in Engineering. We base our tutorials on the material provided to us by Doulos International, who also offer supplementary reference guides. These guides contain information about syntax, coding styles and other information relevant to industry best practices.

While there is strong support for VHDL, Verilog is a language that is not currently known by the majority of team members. These reference guides can be used to leverage knowledge of syntax to become competent in Verilog more quickly. The guides will expand language understanding, improve coding quality, and accelerate all ASIC projects when used during design sessions.

Estimated Equipment Lifetime:

As with any reference material, the guides will be the property of the UW ASIC Team, and will be loaned out to interested individuals as necessary. The material is not expected to become out of date in the near future and should be used for at least 3 years.

Cost Breakdown:

Item	Option #1	Option #2	Option #3
VHDL Reference Guide	15 x $50.00	10 x $50.00	5 x $50.00
Verilog Reference Guide	15 x $50.00	10 x $50.00	5 x $50.00
Approximate Shipping + Taxes*	$170.00	$130.00	$90.00
Total Costs	$1670.00 CAD	$1130.00 CAD	$590.00 CAD

* Shipping is assumed to be about $50.00 and taxes + currency conversion is assumed to be about 8%.

Implementation Schedule:

The reference guides will be incorporated into design sessions as soon as they are received.

Additional Information:

This proposal was prepared with advice and suggestions from:

Name: Sanjay Singh
Position: ECE Lab Instructor

E-mail: ssingh@swen.uwaterloo.ca
Phone Number: x36165

Title:

University Of Waterloo Clean Snowmobile Team - Fall 2010 Weef Proposal

Submitted By:

Name: Peter McClure E-mail: pmcclure@uwaterloo.ca Phone Number: 519-871-3822
Team/Department: UW Clean Snowmobile Team Position: Captain
Total Number of Team Members: 19
Number of Team Members in Undergrad Engineering: 100%

Description of Proposal:

The University Clean Snowmobile WEEF proposal consists of two components: A new snowmobile to be re-engineered and used in the Society of Automotive Engineers' (SAE) Clean Snowmobile Challenges (CSC) in 2011 and onwards, and upgrades to the team's existing dynamometer equipment to improve effectiveness and safety during operation.

Proposal Benefits:

The UW Clean Snowmobile Team provides the opportunity for undergraduate engineering students from all disciplines at the University of Waterloo to apply the skills learned in the classroom and improve their hands-on abilities. The team seeks to re-engineer a snowmobile to improve mileage, lower emissions, and run quieter than a stock machine. In order to effectively compete in the SAE Clean Snowmobile Challenge, the team is planning on purchasing a new snowmobile to work on. In order to be competition contenders, the team wishes to purchase a new, high efficiency snowmobile to improve, rather than trying to improve the performance of a older, less effective machine. This snowmobile will be stored in our work bay and will be improved through the addition of a custom catalytic converter and muffler, among others. The team will use this snowmobile for competitions in 2012 through 2015, and will especially provide project opportunities for fourth year students

The team also requires a set of upgrades to our existing dynamometer setup. These upgrades consist of a servo-actuated load valve, and an upgraded data acquisition unit and wiring harness to support the addition of the load valve to our setup. Our need is twofold. First, as part of the proposed safety protocols for the Student Design Centre, dynamometer testing has to be performed from a booth separate from the cell in which the engine is being run. In order to create a remote setup, we have to switch to the servo-actuated valve because the plumbing for our existing manual valve will not fit through the conduit we've been provided. Secondly, this updated control scheme will help reduce human error and variability in our testing. Due to the aggressive nature of the turbocharger on our current engine, the output power tends to change far faster than . This equipment can be expected to be used for the forseeable future, as it can be installed on the engine of any snowmobile being used.

Estimated Equipment Lifetime:

The new snowmobile will be used for competitions starting in 2012, and will be eligible for use according to competition rules until 2015. After this point the snowmobile will be kept in operation by team members for use as a chase sled and testing vehicle as the team prepares subsequent snowmobiles for competition. The sled will be very useful in this role, and greatly increase the effectiveness of the team's current testing program. The sled can remain in use so long as it is functional, expected to be well past 2020, and once retired can be used by the team for parts in future vehicles. The dyno equipment will remain useable for the foreseeable future as it can be adapted to any engine being used.

Cost Breakdown:

Item	*Option #1*	*Option #2*	*Option #3*	*Option #4*
Ski-Doo MX Z TNT Rotax E-TEC 600 H.O.	$12,299.00	$6,149.50	$3,074.75	$0.00
Wiring Harness (Less SAE 10% Discount)	$535.50	$267.75	$267.75	$0.00
Data Acquisition Unit (Less SAE 10% Discount)	$445.50	$222.75	$222.75	$0.00
Servo Load Valve (Less SAE 10% Discount)	$985.50	$492.75	$492.75	$0.00
	$0.00	$0.00	$0.00	$0.00
	$0.00	$0.00	$0.00	$0.00
TOTAL:	$14,265.50	$7,132.75	$4,058.00	$ 0.00

Implementation Schedule:

The team will purchase the new snowmobile in December of 2010. Plans for re-engineering the sled will begin immediately, with work on the sled commencing following the CSC in March 2011. The sled will be upgraded during the Summer and Fall terms of 2011, for the CSC in March 2012. The sled will eligible for use until the 2015 CSC, and the re-engineering/build schedule will occur until this time. The dyno upgrades will be bought and installed immediately to allow testing for CSC 2011 in March.

Title:

Ieee Student Branch Funding Request

Submitted By:

Name: Matthew Chan
E-mail: tkchan@engmail.uwaterloo.ca
Phone Number: 226-339-0289
Team/Department: IEEE UW Student Branch/ECE
Position: Director of Technical Projects
Number of Team Members: 30
Percent of Members in Undergrad Engineering: 100%

Description of Proposal:

The IEEE Student Branch runs various activities and events to promote engineering. One of them is the IEEE Humanoid Robotics Team, a robotics team formed in 2009 which focuses on exploring the field of humanoid robotics technology. The main goal of the team is to build robots which will be capable to compete in the RoboGames and potentially other humanoid robotics related competitions. Currently, we are looking to run some tutorials in the form of a small robotics competition to give our members some hands-on technical skills before moving on to the actual design of the robot.

Proposal Benefits:

We will be running tutorial in form of a small competition. This would benefit all participating students as they will be given the opportunity to learn and experience robotic design. This competition will be open to all students.
The Humanoid Robotics Team explores one of the most rapidly expanding field of robotics. This project allows engineering undergraduate students to gain technical and communication skills, and expose to the forefront of humanoid robotics research through an international competition. Participation in these kind of events promotes public awareness of the engineering field and its role in the industry and society. Success in the RoboGame will definitely improve international recognition of the University of Waterloo as a technological and innovation leader in. This will enable the Engineering Faculty to attract more bright students.

Estimated Equipment Lifetime:

Not Applicable

Cost Breakdown:

The material cost is compiled by assuming that there would be 10 teams participating in the competition.

Item	*Option #1*	*Option #2*	*Option #3*	*Option #4*
Building Materials (Motor, MCU, sensor, etc.)	$350.00	$300.00	$250.00	$200.00
Arena Material	$30.00	$30.00	$30.00	$30.00
Batteries	$20.00	$20.00	$10.00	$10.00
TOTAL:	$ 400.00	$ 350.00	$ 290.00	$ 240.00

Implementation Schedule:

November 2010
October: Sign up
First Week: Tutorials
Second Week: Work shop
Third Week: Competition

Additional Information:

Contact Information for funding if different than above:

Name: Tina Wang
E-mail: tinaw_868@hotmail.com
Phone Number: 519-500-6255
Position: Treasurer

Title:

Hardware Equipment For University Of Waterloo Nanorobotics Group (Uw_Nrg)

Submitted By:

Name: Omer Mullick E-mail: omullick@engmail.uwaterloo.com Phone Number: 519 500 0828
Team/Department: UW Nanorobotics Group Position: Business Development Officer
Total Number of Team Members: 30
Number of Team Members in Undergrad Engineering: 100%

Description of Proposal:

Thanks to the recent acquisition of lab space in engineering 5, Uw_Nrg can now safely store the materials required for their projects. With extra lab space available, Uw_Nrg in now looking at investing in equipment necessary to proceed towards the next steps in their projects. A short of list of equipment with average cost for purchase is presented below:

- microscope – $1,500
- ccd camera - $2,300
- Function generator - $2,000
- Digitial Multi-Meter - $750
- Hardrive - $250

Proposal Benefits:

The equipment bought will:
-give the undergrad team members the ability to gain experience with important technical equipment with using electrical tools
-allow the Uw_Nrg team to test and improve the current microrobot - which in turn will improve competition results
-Allows Uw_Nrg to share this equipment as necessary with other engineering student teams to spread the benefits to a greater number of engineering students.
The Equipment will be stored in the lab space granted to Uw_Nrg. The lab space is in room 3008 of Engineering 5. Currently only two of the team leads have access to this room and all equipment in the room is secure. The equipment asked for will not require additional maintenance if handled safely. If necessary other student groups can use the equipment given that they have the skills necesarry to use the equipment independently.

Estimated Equipment Lifetime:

To the best of our knowledge, these equipments will never wear out, but rather technology will will wear them out. This equipment will last atleast 20 - 25 years given that they are taken care of.

Cost Breakdown:

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

Item	Option #1	Option #2	Option #3	Option #4
Microscope	$1,500.00	$1,000.00	$800.00	$600.00
CCD camera	$2,300.00	$1,800.00	$1,200.00	$750.00
Function Generator	$2,000.00	$1,300.00	$800.00	$500.00
Digital Multi Meter	$750.00	$500.00	$300.00	$250.00
Harddrive	$250.00	$200.00	$150.00	$100.00
	$0.00	$0.00	$0.00	$0.00
TOTAL:	$6,800.00	$4,800.00	$3,250.00	$2,200.00

Implementation Schedule:

Function Generator - December 20, 2010
Digital Multimeter - January 10, 2010
Microscope - January 25,2010
Competition - May 9-13, 2010

Additional Information:

Insert any additional information here.

Contact Information for funding if different than above:

Name: Name Here
Position: Insert Position Here

E-mail: E-Mail Here
Phone Number: Phone Number Here

Title:

University Of Waterloo Alternative Fuels Team - Fall 2010 Proposal

Submitted By:

Name: Josh Lo E-mail: jkhlo@uwaterloo.ca Phone Number: 519.496.0300
Team/Department: UW Alternative Fuels Team Position: Team Member
Total Number of Team Members: 23
Number of Team Members in Undergrad Engineering: 12

Description of Proposal:

The Univeresity of Waterloo Alternative Fuels Team (UWAFT) regularly participates in large-scale automotove design competitions and is currently entering the third year of the EcoCAR competition. In addition to designing and prototyping an environmentally friendly vehicles that compromise neither performance nor consumer acceptability, UWAFT promotes green technology both on campus and in the community. UWAFT is currently the home of over 20 undergraduate engineering design projects. This proposal focuses on items that will allow everyone to work safely, meet our competition targets for vehicle performance and community/campus outreach and education, and improve the productivity and organization of the team's new space in E5.

Proposal Benefits:

1. Protect everyone working on high voltage components of the vehicle
2. Allow fabrication and implementation of components designed by undergraduate engineering students
3. Great flexibility for delivering multimedia presentations to educate UW students and the community about fuel cell technology, advanced hybrid powertrain design, prominent environmental issues, etc
4. Extend service life of major team assets (ie team truck)
5. Utilize the new E5 facility to a fuller extent, increasing the functionality of the space and productive capacity of the team

As UWAFT's facilities and resources increase, we will be able to provide greater support to undergraduates' design projects and better educate them and engage them. All undergraduates involved with UWAFT has full access to its resources. Upon request, UWAFT may allow other student teams to access its resources, pending proper training.

The team's workspace and office in E5 is a secure location with ample space to store the requested items. Little to no maintenace will be required as long as the equipment is used with a measure of common sense. Any specific instructions will be learned from the included user manuals.

Estimated Equipment Lifetime:

Although this is the last year of the current competition, UWAFT will be continuing to participate in automotive design competitions and will almost certainly be pursuing a powertrain containing electric elements. The items we are considering are as follows:

- High Voltage Safety Gloves: 3-4 years. These will last into the next competition
- Mechanics Gloves: 3-4 years. These will last into the next competition
- Components for custom touch-screen driver-car interface, other elec components: 1 year remaining in current competition. Parts are robust and reusable for future competitions.
- Projector: 5+ years. Permanent team asset.
- Projector Screen: Indefinite. Permanent team asset.
- 12V Car Battery: 4+ years. For use in current competition car, can be reused in team truck
- Truck bed lining: Until end of the team truck's service life
- Office chairs and storage solutions for tools, components, etc (eg. wall mounted tool storage boards) for use in E5: Indefinite. Permanent team asset

Cost Breakdown:

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

Item	Option #1	Option #2	Option #3	Option #4
Safety Gloves	$600.00	$600.00	$600.00	$600.00
Custom vehicle interface, electrical components	$1,200.00	$1,200.00	$900.00	$700.00
Projector + Screen	$650.00	$650.00	$0.00	$0.00
12V Car battery	$125.00	$125.00	$125.00	$125.00
Office/Storage Equpiment for E5 space	$800.00	$700.00	$600.00	$0.00
Truck Bed Lining	$621.00	$0.00	$0.00	$0.00
TOTAL:	$3,996.00	$3,275.00	$2,225.00	$1,425.00

Implementation Schedule:

All items in the above cost breakdown are useful immediately and would be purchased quickly. The next competition is in June 2011, but the items requested will all retain usefulness well beyond that date and into future competitions.

Additional Information:

UWAFT is grateful for WEEF's past and continued support.

Contact Information for funding if different than above:

Name: Mike Giannikouris
E-mail: mgiannikouris@gmail.com
Position: Team Leader
Phone Number: (519) 888-4567 ext 36208

Title:

University Of Waterloo Micro-Aerial Vehicle Team's Request For Resource Funding

Submitted By:

Name: Kyel Ok

E-mail: kyelok@gmail.com

Phone Number: 519-722-3529

Team/Department: University of Waterloo Micro-Aerial Vehicle team

Position: President

Total Number of Team Members: 21

Number of Team Members in Undergrad Engineering: 20

Description of Proposal:

The UWMAV team seeks to develop automated fixed-wing, flapping-wing, and rotary-wing vehicles to compete in the International Micro Air Vehicle Competition 2011. As a continuation of the WEEF funded Autopilot platform, undergraduate students from Mechatronics, Mechanical, and Electrical Engineering are developing the next version of the system. The funding requested will be used to upgrade and integrate newer components on a revised PCB design to create a more effective and robust system. Furthermore, a part of the funding will be used to purchase a special six component force/torque transducer and accompanying data acquisition to perform wind tunnel testing of the vehicle designs to identify aerodynamic forces and moments in the existing wind tunnel facility at UW. This is a critical step to successful entry into international competitions for autonomous flights of the existing vehicles. Presently, there is no provision for measuring steady or unsteady aerodynamic forces and moments.

Proposal Benefits:

The University of Waterloo Engineering framework does not include an official aerospace or aeronautical engineering program.The typical coursework of such a program can be found in the MME, ECE and SYDE programs; however, there is no framework for practical and academic experiences geared primarily to an aeronautical application. Clubs like UWMAV intend to fill this void by providing a framework where students can gain practical knowledge and experience in this field. The equipment in this proposal will be used to design, upgrade and support aerial platforms and systems that will expose the undergraduate students involved to practical experience and cutting-edge research. In the spirit of promoting the University of Waterloo and exposing the opportunity to the undergraduate students, the hardware requested will be used to compete in the International Micro Air Vehicle competition next summer. In the previous attempts, lack of adequate estimates for aerodynamic force coefficients and moments was the main reason behind the inability to fly autonomously. The need is urgent, as wind tunnel testing and the platform design will be undertaken in the Winter term for the summer competition. Each vehicle redesign in subsequent years will require the exact same wind tunnel testing, and a similar

autopilot system. The requested equipment will be useful for many years. The equipment will also be made available for use by other teams, e,g WARG. The new student design center location for UWMAV will enable safe storage of the requested hardware, and is protected by two sets of locks and an active team member only access policy.

Estimated Equipment Lifetime:

The main cost of this proposal is the 6 component force/torque balance, and it has an expected lifetime of over 10 years. The data acquisition board and the autopilot will be operational for at least five years, but as it is a computer component, may at some point require replacement to keep up with the rapid progress in the computing industry.

Cost Breakdown:

The first option is the most ideal option with the full autopilot system along with the full six component force balance and its associated equipment. The second option is for the full autopilot and just the six component force balance without its associated hardware. The third option is for the absolute bare minimum for both the autopilot and the six component force balance. The last option is for the bare minimum autopilot system without the six component force balance.

Item	*Option #1*	*Option #2*	*Option #3*	*Option #4*
Force Balance				
• Six component force/torque balance	3850	3850	3850	0
• Interface board and power supply	1500	0	0	0
• DAC, cables and test stand hardware	1600	0	0	0
• HST	237	131.28	131.28	0
Co-axial Helicopter (+Upgrades)	650	650	650	0
AutoPilot				
• PCB Prototype (x2)	800	800	800	800
• IMU	1000	1000	1000	1000
• Gumstix (x2) + MCU	500	500	500	500
• GPS + Sonar	450	450	0	0
• Camera	150	150	0	0
TOTAL:	**10737**	**7531.28**	**6931.28**	**2300.00**

Implementation Schedule:

Upon release of funds, UWMAV will purchase the force balance sensor and the autopilot components immediately, and will instigate construction of the appropriate test stand, designed in ME 481 in the Spring 2010 semester. It is expected that the test stand will be operational by mid-February, allowing sufficient time for aerodynamic testing prior to competition.The elecetrical and the mechanical components of the Co-axial helicopter and the Autopilot design will be completed by the end of Fall 2011 term. The high-level software for the Autopilot will be developed byJune, 2011 for the IMAV 2011 competition.

Title:

Waterloo Aerial Robotics Group, Weef Proposal

Submitted By:

Name: Yassir Rizwan E-mail: yassir.rizwan@gmail.com
Phone Number: 226-808-0227
Team/Department: Waterloo Aerial Robotics Group (WARG Position: Director
Total Number of Team Members: 30
Number of Team Members in Undergrad Engineering: 90%

Description of Proposal:

This proposal is for multiple Inertial Measurement Units (IMU) for projects that are well underway at WARG. An IMU is an attitude and heading reference system that is a vital necessity for aerial robots. In the past WEEF has funded IMU's from Microstrain, which at the time, were one of the only options in the market. With recent advances in the technology, other vendors are now offering similar products for a third of the price. We've selected one such product and would like to use it for all our vehicles. WARG is currently in desperate need for 5 units. We are, however, willing to buy them 2 or 3 a term.

Proposal Benefits:

The three most urgent projects include an entry for the 2011 UVS Canada Competition, a high performance UAV and an autonomous fire detection quadrotor. Each of these projects have involved at least 5 undergraduate students in ECE and MME. The high performance UAV and the quadrotor both consist of custom designed electronics and mechanical parts and state-of-the-art techniques in control of Unmanned Vehicles. They will provide continuation for WARG's future interests, as well as platforms for current and future undergrads to work on. In addition, the quadrotor will be used by future WARG members to take part in the International Aerial Robotics Competition.

Estimated Equipment Lifetime:

The expected life of the Vector Nav IMUs is 3 to 5 years. WARG managed to use one of its oldest IMUs (from Microstrain) for approximately 5 years on multiple projects until it finally broke down. We expect these to last the same.

Cost Breakdown:

Three options are listed below:

Item	*Option #1*	*Option #2*	*Option #3*	*Option #4*
5x VN-100T Vector Nav IMUs	$4,000.00	$0.00	$0.00	$0.00
3x VN-100T Vector Nav IMUs	$0.00	$2,400.00	$0.00	$0.00
2x VN-100T Vector Nav IMUs	$0.00	$0.00	$1,600.00	$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:	$4,000.00	$2,400.00	$1,600.00	$ 0.00

Implementation Schedule:

The quadrotor project started nearly a year ago and is expected to be autonomously hovering within the next three months. The entry for the UVS Canada competition is already flying and plans to achieve autonomy by March 2011. Similarly, the high performance UAV is in advanced stages of development, scheduled to be demonstrated by April 2011.

Additional Information:

We are very grateful for WEEF's continuous support to our team. The number of IMU's may seem excessive, but with one dedicated for each project we can ensure that the projects finish within the schedule mentioned above. Apart from the 3 most urgent projects listed above, WARG is also involved in supporting a group of second year students with their own quadrotor (which also needs an IMU) and a ground vehicle (which would also benefit from an IMU) that accompanies the UVS Canada competition entry. Pricing information on the Vector Nav IMUs can be found here:(http://www.vectornav.com/pricing)

Contact Information for funding if different than above:

Name: Name Here
Position: Insert Position Here

E-mail: E-Mail Here
Phone Number: Phone Number Here

Title:

University Of Waterloo Robotics Team - Weef Proposal F10.

Submitted By:

Name: Craig MacKenzie E-mail: cemacken@gmail.com Phone Number: 519-502-5604
Team/Department: UW Robotics Team Position: Team Executive
Total Number of Team Members: 30
Number of Team Members in Undergrad Engineering: 100%

Description of Proposal:

The UW Robotics Team is continuing to increase the scale of its projects while still remaining flexible in the support of new projects and ideas. This fall we are once again running our inaugural mini sumo robotics competition, which is currently teaching 20 teams of first year students (100+) the principles of robotics and hands on design under the team's mentorship. We our also kickstarting a new project in the form of an Autonmous Lawnmower for competition in Ohio this summer. Finally, we are continuing to accrue funding for an industrial grade outdoor rated LIDAR sensor for use with various projects.

Proposal Benefits:

The mini sumo competition is run by the team specifically as a teaching tool for inexperienced members. It is the only event of its scale and kind in the faculty, which sees students learn the fundmentals of electronics, mechanical design and embedded software as early as first year. The autonomous lawnmower project is being run in conjuction with a four year design project (in addition to contributing members from younger years). Acquisition of a proper LIDAR will vastly increase the team's performance at competition time and further the complexity of the projects we can understake. All funds requested for the mini sumo competition are to reimburse purchases already made. The autonmous lawnmower is still in the design stages and construction is expected to start at the end of the term. The LIDAR can be immediately integrated into existing projects for testing purposes and will see extended and heavy use throughout the team.

Estimated Equipment Lifetime:

The autonomous lawnmower chassis is expected to see use in at least one additional competition year. The LIDAR is expected to be used until it no longer functions properly. Sumo funding is this term's expenses only.

Cost Breakdown:

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

Item	Option #1	Option #2	Option #3	Option #4
Mini Sumo Reimbursement	$3,000.00	$3,000.00	$3,000.00	$3,000.00
Autonomous Lawnmower Fabrication Materials	$1,000.00	$500.00	$500.00	$0.00
LIDAR Funding	$1,500.00	$1,000.00	$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:	$5,500.00	$4,500.00	$3,500.00	$3,000.00

Implementation Schedule:

The autonomous lawnmower must be completed by June. The sumo competition is in progress. LIDAR will be used as soon as we can afford to purchase it.

Title:

Waterloo Rocketry Team Payload

Submitted By:

Name: Stefan De Young E-mail: sdeyoung@uwaterloo.ca Phone Number: 226-868-3767
Team/Department: WatSat (Satellite Design Team) Position: Team Lead
Total Number of Team Members: 30
Number of Team Members in Undergrad Engineering: 75%

Description of Proposal:

In order to gain experience in the carrying out the successful design, construction, and operation of a contained experiment designed to fly on a rocket in preparation for the Canadian Satellite Design Challenge, WatSat has secured the position of payload provider to the Waterloo Rocketry Team. The payload consists of two main elements: a communications system linked with the rocket's avionics and a mass transfer experiment modeled after a series of trials conducted by the European Space Agency. We are asking for funding for the three most expensive and critical elements of our payload. The payload will be constructed this semester in preparation for ground testing next semester prior to launch at the Rocket team's competition in June.

Proposal Benefits:

1) This project will give WatSat members experience that will enable superior performance in our CSDC competition piece.

2) The WatSat project will provide a stepping stone for undergraduate students who wish to pursue higher education in aerospace engineering.

3) The communications system will likely be reused by the rocketry team in future competitions.

4) The mass transfer experiment is fully reuseable either as a rocketry or balloon payload.

5) The camera used in the mass transfer experiment would be available for other uses including promotional puposes, when not needed for data logging.

Estimated Equipment Lifetime:

1) Camera - 3 years
2) Transceivers - 3 years
3) Chemicals - 1 year

Cost Breakdown:

Item	Option #1	Option #2	Option #3	Option #4
Camera	$200.00	$200.00	$200.00	$0.00
Transceivers x2	$200.00	$200.00	$100.00	$0.00
Chemicals (methanol & cyclohexane)	$75.00	$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:	$ 475.00	$ 400.00	$ 300.00	$ 0.00

Implementation Schedule:

PDR	- Oct. 16 2010
CDR	- Mid-November
Purchase Componenets	- Mid-November
Construction Complete	- December 23, 2010
Ground Testing	- January 2011
Launch at Competition	- June 2011
Presentation at CUPC	- November 2011

Additional Information:

WatSat's partnership with the Rocketry team has granted us user priveledges to the design bay in E5 1008.

The Rocketry team has pledged to locate the balance of the funding required for this payload, which is why WatSat is only requesting funding for our most expensive items from WEEF.

The Rocketry team will be carrying an additional payload: a glider that is the 4th year design project for 3 students. This payload is not being managed by WatSat, and is a separate entity.

Contact Information for funding if different than above:

Name: Name Here
Position: Insert Position Here

E-mail: E-Mail Here
Phone Number: Phone Number Here

Title:

University Of Waterloo Formula Motorsports (Formula Sae) Team Weef Proposal

Submitted By:

Name: Peter Chan E-mail: uwfsae@gmail.com Phone Number: x35904
Team/Department: Formula SAE Position: Business Group Leader
Total Number of Team Members: 50+
Number of Team Members in Undergrad Engineering: þ5%

Description of Proposal:

Four items are included in this proposal which would provide immediate benefit to the team to be able to make full use of the facilities in E5 and to meet new saftey regulations at our competition. Inorder to test our engine, an engine dyno controller is required, we currently have a dyno absorber unit worth $35,000 retail value. We have contacted many companies to sponsor our dyno requirements for E5, and have achieved sponsorship from mclaren technologies in Michigan to setup and calibrate the equipment.

1. Engine Dyno Controller.
2. 2x 2 layer driving suits required (as per new rules).
3. Engine Dyno Accessories
4. Data Acquisition Sensors for planned development of the car.

Proposal Benefits:

The FormulaSAE team is Waterloo's largest undergraduate engineering team on campus, and participates in the largest undergraduate engineering competition in the world. The requested items will allow our team to teach more than 100 first and second year students about automotive technology, with a focus on hands on learning. Furthermore the FSAE team and its supporters like WEEF receive exposure at numerous events such as the Toronto International Auto Show and Molson Indy 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. These items have no maintenance requirements during their expected lifetimes. These items will provide direct benefit to students in ME481 and ME481 in the current and future terms as well as provide an ancilliary benefit to all students exposed to the car..

Estimated Equipment Lifetime:

1. Dyno Controller expected life time is 15+ years
2. 2 layer suits are expected to be used for 8+ years, previous suits used for 10 years.
3. Dyno Accessories expected life time of 15+ years
4. Data Acquisition Sensors will last the team three years.

All of these items will be used beyond this immediate season.

Cost Breakdown:

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

Item	*Option #1*	*Option #2*	*Option #3*	*Option #4*
Dyno Controller	$6,995.00	$6,995.00	$6,995.00	$6,995.00
Suits	$650.00	$650.00	$650.00	$0.00
Dyno Controller Accessories	$400.00	$400.00	$0.00	$0.00
Data Acquisition Sensors	$500.00	$0.00	$0.00	$0.00
	$0.00	$0.00	$0.00	$0.00
	$0.00	$0.00	$0.00	$0.00
TOTAL:	$8,545.00	$8,045.00	$7,645.00	$6,995.00

Implementation Schedule:

All items purchased would be used immediately by the entire team. The engine dyno will be setup and reconfigured by Mclaren performance, as part of a sponsorship agreement. The suits will be used for our competition in May, 2011 and for each competition thereafter.

Additional Information:

Please take into consideration our very large team when deciding on the amount of funding that we will receive. We also employ 2-3 volunteer co-op students each term, providing them with extensive hands-on skills and automotive design experience. We struggle to cover all of our expenses with so many undergraduate students to support!

Contact Information for funding if different than above:

Name: Peter Chan
Position: Business Group Leader
E-mail: uwfsae@gmail.com
Phone Number: x35904

Title:

UW Mars Rover team - Rover supplies

Submitted By:

Name: Pablo Molina E-mail: pmolina@uwaterloo.ca Phone Number: 2263390438
Team/Department: Mechatronics Engineering Position: UW Mars Rover Team Lead
Total Number of Team Members: 20
Number of Team Members in Undergrad Engineering: 100%

Description of Proposal:

The "Waterloo Space Society - Rover Team Supplies" proposal is a fundamental donation to the Mars Rover Challenge Team. The Waterloo Space Society, will enter a team into the 2011 University Rover Challenge held by Mars Society International. Now in its 4th year, university students enter the competition by designing and building the next generation of Mars Rovers.

As our second year of entry, we are asking for donations to purchase various core electronic/hardware components to re-design the entire chassis, the electrical system and build a new robotic arm.

Proposal Benefits:

Benefits for UW engineering faculty/ students:
1) UW engineering exposure in scientific/engineering community on an international level.
2) Provide a stage for UW students to compete with international universities.
3) Continuous Engineering design project - intention to enter annualy We have two younger members of the team that are planning to work on the project as their 4th year design project.
4) Students will gain a wide spectrum of valuable learning and design experience/skills: problem solving, scientific researching (biology, geology, communications, etc), software modelling, simulation, electronic and mechanical design/manufacturring/assembly, components implementation and integration, system debugging.
5) Designing for Space applications, an area UW does not currenlty do a lot of work in, but student demand exists.

The team will keep going since we have two groups of young members that want to work on their 4th year design projects in the team. In addition, most parts will remain in the robotics team and can be re-utilized or used for other projects/research

Estimated Equipment Lifetime:

The equipment will remain at the robotics team after the competition is completed. The equipment life is approximately 2-3 years depending on the parts. The parts will remain as part of the robotics team and therefore they could be utilized for any other project.

Cost Breakdown:

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

Item	*Option #1*	*Option #2*	*Option #3*	*Option #4*
Robotic Arm mechanical parts	$300.00	$300.00	$300.00	$300.00
Robotic Arm electrical parts	$300.00	$300.00	$300.00	$300.00
New Robot computer	$800.00	$600.00	$400.00	$400.00
Chassis Parts (gears, wheels, parts)	$1,000.00	$800.00	$800.00	$700.00
New Camera system	$800.00	$800.00	$600.00	$300.00
	$0.00	$0.00	$0.00	$0.00
TOTAL:	$3,200.00	$2,800.00	$2,400.00	$2,000.00

Implementation Schedule:

Summer 2010 – Design Phase
Fall 2010 - Construction and Interfacing Phase
Winter 2011 - Debugging and Testing Phase
May 2011 - Compete.

Additional Information:

The Mars Society University Rover Challenge takes place at the Mars Desert Research Station (Utah). In 2010, nine American, two Canadian university (York and UW) and one Polish team entered the challenge to compete in four distinct tasks. York University won the 2009th competition. Oregon State University won the 2010 competition. The competition was featured by Scientific American, InformationWeek, and The Space Review and is good publicity for UW.

Contact Information for funding if different than above:

Name: Name Here
Position: Insert Position Here

E-mail: E-Mail Here
Phone Number: Phone Number Here

Title:

University Of Waterloo Baja Sae Team Weef Proposal

Submitted By:

Name: Ryan Kim E-mail: r3kim@engmail.uwaterloo.ca Phone Number: 519-590-3843
Team/Department: UW Baja SAE / MME Position: Team Co-Leader
Total Number of Team Members: 33
Number of Team Members in Undergrad Engineering: 100%

Description of Proposal:

The Baja SAE team will be designing and manufacturing a new vehicle for the 2011 season. The team is registered to compete with other schools worldwide at Illinois in June 2011. The rock crawl feature at competition this year is Baja's main challenge. With brutal racing conditions ahead, the team is sourcing appropriate drivetrain and suspension components as well as preparing for potential subsystem failures. Also, this year the team is looking to obtain some tools for the brand new work bay at the SDC in the E5 building. The following is a summary of items the team is looking to purchase with assistance from WEEF:

1) Spare parts and service tools
2) Specialized drivetrain components for rock crawl
3) Work bay tools and maintenance items

Proposal Benefits:

2011 marks the 10th consecutive year that UW Baja SAE has gone to competition. As of now the team has 1 operational vehicle used for driver training and data acquisition. Approximately 60% of the team consists of first to third year engineering students that help the fourth year designers build and repair vehicles, which provides invaluable practical experience. These junior members will eventually be designing subsequent vehicles and depending on team budgets, some subsystem parts will be reused. All tools in the work bay are used for the full service lifetime and are only replaced if they are necessary and no longer functional. Most hand tools are secured in a tool chest and are accessible to all team members. Every tool and piece of equipment will continue to be used by future team members and will be frequently used all year round in order to help up-and-coming Waterloo engineers develop excellent design and fabrication experience.

Estimated Equipment Lifetime:

The material for spare parts can be reused in future vehicles if they are not needed at competition (they will last until broken from overloading or fatigue). The service tools developed from the extra material will be compatible with future team cars and will be used until they are no longer functional or require repair. The specialized drivetrain parts can also be reused for future competitions as part of the original design or as spare parts. And finally, all work bay tools and maintenance items will be used for their full service life or until they become unusable.

Cost Breakdown:

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

Item	*Option #1*	*Option #2*	*Option #3*	*Option #4*
Work bay tools and equipment	$367.00	$367.00	$367.00	$367.00
Work bay maintenance / misc items	$160.29	$160.29	$160.29	$160.29
Parts (CVT/CV shafts/sprockets/suspension)	$1,096.00	$1,096.00	$1,096.00	$1,096.00
Service tools (compressor & misc tools)	$350.00	$350.00	$350.00	$0.00
Spare parts material (frame & suspension)	$300.00	$300.00	$0.00	$0.00
Team poster / promotional items	$173.00	$0.00	$0.00	$0.00
TOTAL:	$2,446.29	$2,273.29	$1,973.29	$1,623.29

Implementation Schedule:

The competition for 2011 is held in June. All vehicle parts and tools must be purchased by the end of January 2011 to ensure successful completion of our vehicle assembly target date of February 28, 2010.

Additional Information:

None.

Contact Information for funding if different than above:

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

Title:

Treadle Pump Materials

Submitted By:

Name: Curtiss L E-mail: CurtissLuong@gmail.com Phone Number: 2263390460
Team/Department: EWB Position: Director of Internal Operations
Total Number of Team Members: 50+
Number of Team Members in Undergrad Engineering: 80%

Description of Proposal:

A Treadle Pump is a human-powered water pump designed to lift and transport water. This proposal is to purchase materials to attempt to build a treadle pump at UW. The treadle pump would then be used by EWB for demonstration purposes.

Proposal Benefits:

The many engineering students in EWB will be able to experience first-hand how to build a treadle pump. This is a great opportunity for students that enjoy learning about how people live around the world, but also enjoy hands-on 'engineering' type activities. This will also have lasting benefits after it is built, as the treadle pump is a great educational tool when talking about development and global engineering to students within, and outside of UW Engineering. This machine will be stored and maintained by EWB.

Estimated Equipment Lifetime:

The Treadle Pump should last at least five years. The project will begin immediately, and should be completed by the end of January. After it is done, it will be used continuously until it breaks down beyond repair.

Cost Breakdown:

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

Item	*Option #1*	*Option #2*	*Option #3*	*Option #4*
Wood (2x4, and 1/2 inch Plywood)	$220.00	$170.00	$50.00	$0.00
PVC Pipe and Check Valves	$70.00	$50.00	$25.00	$0.00
Metal Connectors, Screws	$25.00	$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:	$ 315.00	$ 220.00	$ 75.00	$ 0.00

Implementation Schedule:

Equipment Purchase: November
Construction: November-Feburary
Use: Spring 2011 - Onwards

Additional Information:

Thanks!

Title:

Midnight Sun Solar Race Team

Submitted By:

Name: Daniel Matzeg E-mail: dmatzeg@gmail.com Phone Number: 519-888-4567 x32978
Team/Department: Midnight Sun / Systems Design Engineering Position: Mechanical Manager
Total Number of Team Members: 50
Number of Team Members in Undergrad Engineering: 50

Description of Proposal:

The Midnight Sun Solar Car Team is the largest student run project at the University of Waterloo. We are composed of students from a variety of faculties and departments. Every two years we design and build a solar race car to compete in competitions such as the North American Solar Challenge and the World Solar Challenge. In addtion to racing the car, we also have a very successful education campaign where we go to schools and events in the community to talk about alternative and renewable energies.

Proposal Benefits:

The Midnight Sun Solar Race Team is made up of approximately 20 core members and 30 student volunteers. The majority of the members are in the faculty of engineering. By joining the team they get to develop many technical skills which they would not have been exposed to during their school or work terms. This includes PCB design, mechanical design and embedded programming. Most students are given a project of their own, allowing them to design and innovate components that will be used in the next car. As they have to see their concept from the design phase through to when it is built, students are able to develop valuable time management, communication and organisational skills. During a race, students are able to work in a strong team environment as we work together to get the car finished and ready to race. As the Midnight Sun team has been provided with a secure bay in the E5 SDC, all the equipment will be locked at all times. We are looking into installing security cameras to provide further protection for the equipment. As every two years a new car is conceptualized and constructed, the equipment will be under continuous use. Any consumable materials will be used until the supply has been depleted.

Estimated Equipment Lifetime:

This project's estimated date of completon is July 1, 2011 as we will be racing the car at the World Solar Challenge in October 2011. 60% of the composite fiberglas material will be used on our current car and the remaining will be used for material testing, reparis, and future projects. The new computer monitors are expected to be used by the team for the next 15 years. Depending on how much wear the maximum power point trackers acumulate we will probably be able to use them for our next car. MPPTs are always being replaced as they wear fast and are an integral part of the car. The oscilloscope is an important tool for motor calibration and is expected to last 15 years with proper care. All vehical components will be stored in our garage and after the car's life cycle is complete they will be salvaged and use on the new car if possible.

Cost Breakdown:

- The maximum power point trackers are used to drive solar cells at their correct voltage. For our new car, Midnight Sun X we require four new MPPTs at $1,200 each.
- Using fiberglass nomex composite material for electrical containment of PCB's, lithium ion battery, as well as aerobody repairs will minimize the weight of the car, allowing for better performance.
- An oscilloscope of $3000 value will be requried for motor calibration to better improve efficiency.
- Four new computer monitors of a $200 value each will be required for FEA and CFD work.

Item	*Option #1*	*Option #2*	*Option #3*	*Option #4*
Composite Fiberglass (Partial)	$1,900.00	$1,600.00	$1,200.00	$800.00
Computer Moniters (Partial)	$500.00	$350.00	$250.00	$100.00
Maximum Power Point Trackers	$1,600.00	$1,200.00	$800.00	$500.00
Oscilloscope (partial)	$500.00	$350.00	$250.00	$100.00
TOTAL:	$4,500.00	$3,500.00	$2,500.00	$1,500.00

Implementation Schedule:

Funds allocated towards the maximum power point trackers and computer monitors will be used immediately while the funds for the oscilloscope will be used in December, when we purchase the unit. The fiberglass composite material will also be purchased immediately.

Additional Information:

If the team's proposal receives funding, WEEF's contribution will be recognized as follows: recognition on the car, recognition on the team website, recognition on the team support trailer, recognition on the team shirts and recognition on the team's bi-monthly newsletter. Please note that recognition on the solar car, shirt and support trailer is directly proportional to the amounts paid.

Contact Information for funding if different than above:

Name: Kevin Kyeong
E-mail: midsun.kevin.kyeong@gmail.com
Position: Project Manager
Phone Number: 519-888-4567 x32978

Title:

Portable Table For Cess

Submitted By:

Name: Erik Gaspar E-mail: eagaspar@engmail.uwaterloo.ca
Team/Department: Chemical Engineering Student Society Position: President

Description of Proposal:

A collapsable table would greatly help the operations of CESS in such events as BBQs and giveaways. The table would be relatively inexpensive and be of use for quite some time for future CESS events. BBQs are a great source of CESS funds and we have several a term.

Proposal Benefits:

Benefits include: improved distribution of hamburgers during BBQs, reduced dependance on nearby 4th year room for tables, lighter tables for ease of transport, collapsable for ease of storage. Collapsable tables are necessary due to lack of storage space in the CESS Office. The tables can be used until they are no longer servicable. BBQs are held several times every term and giveaways occur about once a term.

Estimated Equipment Lifetime:

The two tables, properly maintained, should last 6-8 years, if not more.

Cost Breakdown:

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

Item	Option #1	Option #2	Option #3	Option #4
Gracious Living Folding Resin Table, 6ft.	$59.99	$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
	$0.00	$0.00	$0.00	$0.00
TOTAL:	$ 59.99	$ 0.00	$ 0.00	$ 0.00

Implementation Schedule:

The table will be purchased from Canadian Tire shortly after receiving WEEF approval. The table will be stored in the Chemical Engineering Student Society's main office.

Additional Information:

The table will be available for any other chemical/nanotech engineering events upon request.

Contact Information for funding if different than above:

Name: Erik Gaspar E-mail: eagaspar@engmail.uwaterloo.ca
Position: CESS President Phone Number: 519-513-4003

Title:

Village One Solar Thermal Project.

Submitted By:

Name: Hussein El-Kotob E-mail: husseinkay@gmail.com or helkotob@engmail.uwaterloo
Phone Number: 519-574-7612
Team/Department: Sustainable Technology Education Project (STEP) Position: Engineering Leader
Total Number of Team Members: 15
Number of Team Members in Undergrad Engineering: 10/15 *100% = 66%

Description of Proposal:

STEP with the help of The University of Waterloo has taken on a solar thermal demonstration project. The University of Waterloo has graciously purchased 15 Solcan solar thermal panels for heating water. The University is allowing STEP to perform the project management/funding required for performing the installation. Currently the plan is to install the panels on top of village one student residence..
The project will also have a monitoring system designed by undergraduate engineering student to register the power the panels have produced and the CO2 emissions it has prevented. This info will be available on the STEP web site, that is available to all students, providing them with real world application of renewable energy.

Proposal Benefits:

- Project management learning oppurtunity for undergraduateengineers
- Hands on experiane in control and monitoring
- Informative informatin for the undergraduate student to learn more about solar thermal energy
- The project wil be on village one roof top as well as in the basment where the heat exchanger will be installed
- An agreement with plants ops has been decided regarding regular system maintenance and glycol propelen exchangment.

Estimated Equipment Lifetime:

The life time of solar thermal panels is usually 15-20years. It will be a useful and educational project.

Cost Breakdown:

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

Item	*Option #1*	*Option #2*	*Option #3*	*Option #4*
Panel and racking installation and design	$5,381.75	$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
	$0.00	$0.00	$0.00	$0.00
TOTAL:	$5,381.75	$ 0.00	$ 0.00	$ 0.00

Implementation Schedule:

Once we have the funds the project wil be implemented.

Additional Information:

The quote for panel racking and installation listed above is an estimated quote aquired from UNISTRUT a racking company located in cambridge. An email for proof can be provided if required.
We have also rescieved partial ($2500) funding from North Waterloo Hydro this has already been subtracted from the price listed above. So for total Panel and racking installation and design the system price is $7,881.75

Contact Information for funding if different than above:

Name: Name Here
Position: Insert Position Here

E-mail: E-Mail Here
Phone Number: Phone Number Here

Title:

Iron Warrior Racks For Upcomming New Buildings

Submitted By:

Name: Roy Lee E-mail: iwarrior@engmail.uwaterloo.ca Phone Number: 519 888 4567 x32693
Team/Department: The Iron Warrior Position: Editor-in-Cheif
Total Number of Team Members: ~70 (~40 on stream now, ~30 on B-Soc)
Number of Team Members in Undergrad Engineering: 100%

Description of Proposal:

This proposal for new racks to replace the old ones that are broken and get some more for the new buildings that are going up/are already up.

Proposal Benefits:

This investment will affect all the readers of The Iron Warrior and the image of the Engineering Faculity at the University of Waterloo. It will reflect well on The Iron Warrior, as an established rack for newspapers looks much better than a pile randomly placed on a table. The Iron Warrior is a method of expression for all of the university's undergraduate engineers, it is also a source of information and a source of entertainment. Once purchased these racks will need to be installed into the various buildings, most likely mounted by plant ops, the extras will be stored in the Iron Warrior office, which is always locked unless occupied. Those that will benifit are the entire engineering undergraduate community and more, as all clubs are welcome to advertise with us and all students are welcome to read and write for us.

Estimated Equipment Lifetime:

The intended lifetime of the racks will be 15 +years. The new racks for E5 will be purchased before the end of this term, and installed asap. As for E6, QNC and the replacements, they will be done when the buildings are complete or when the racks are in need of replacing.

Cost Breakdown:

Note: these costs are estimates are formed from the numbers for orders of 10, the cost for smaller orders will not be exactly half as shown in the table below. At the time of the submitting of this form, an actual estimate had not been put together yet.

Item	*Option #1*	*Option #2*	*Option #3*	*Option #4*
10 x Single Tier Wall Rack	$500.00	$0.00	$0.00	$0.00
10 x Double Tier Wall/Standing Rack	$1,240.00	$1,240.00	$0.00	$0.00
5 x Single Tier Wall Rack	$0.00	$0.00	$250.00	$0.00
5 x Double Tier Wall/Standing Rack	$0.00	$0.00	$620.00	$620.00
	$0.00	$0.00	$0.00	$0.00
	$0.00	$0.00	$0.00	$0.00
TOTAL:	$1,740.00	$1,240.00	$ 870.00	$ 620.00

Implementation Schedule:

E5: ASAP
Replacements: ASAP
Other buildings: when built

Title:

Fourth Year Project: A Wireless Wearable Medical Device For Remote Communication Of Patient Vitals

Submitted By:

Name: Julianne Kline E-mail: Julianne.T.Kline@gmail.com
Team/Department: Fourth Year Project, Mechatronics Position: Electrical and Mechanical System Engineer

Description of Proposal:

For our fourth year project, we are designing a wireless wearable medical device, with the intended application of remote monitoring of patient vitals and storage of patient vital data over time. The team is composed of four Mechatronics Engineering students, and we are working closely with Dr. Nieva to incorporate MEMS sensors into the project. Our advisor is Dr. Huissoon. We are also looking to expand the project to undergraduate students through the involvement in a student team such as CUBE. These efforts are currently underway and more information will be provided at the WEEF presentations.

Proposal Benefits:

Presently, the project is in its infant stages; however, we are planning to use the design project as an engine for promoting medical technology within the University .We would like to team up with a student team (preferably CUBE), and promote undergraduate interest in medical device design. Due to the infant stages of the project, more information will be provide on this at the WEEF presentation. The University of Waterloo will benefit from students graduating who are already prepared for careers in medical device design. These students will be able to develop new technologies very shortly after they graduate from their programs.

In addition, the University of Waterloo will receive a positive reputation from the dispay at the Mechatronics Fourth Year Design Symposium, and from the relationships that the team builds with companies and the community. Should you choose to assist with funding, the WEEF logo will be placed on all project-related documents and presentations.

Estimated Equipment Lifetime:

All parts are expected to be used for the fourth year project, which will be completed and displayed by March 22, 2011. After the design symposium, the parts can certainly be donated and reused for other projects.

Cost Breakdown:

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

Item	*Option #1*	*Option #2*	*Option #3*	*Option #4*
RS9110-N-11-31Sensifi 801.11n Wi-Fi Sensor Module	$86.00	$86.00	$86.00	$0.00
Medical Temperature Sensor - E52-CA15A-3.2-4M-ND	$188.20	$94.10	$0.00	$0.00
Wiring, solder, connectors, various electrical	$30.00	$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:	$ 304.20	$ 180.10	$ 86.00	$ 0.00

Implementation Schedule:

Nov 7, 2010 - Deadline for obtaining sensors and wi-fi sensor module

Nov 21, 2010 - Finish testing, characterization and calibration of all sensors
Nov 21, 2010 - Finish hardware design
Nov 22, 2010 - ME481 design presentation due
Dec 14, 2010 - Finish hardware prototype and initial coding
Winter, 2011 - Hardware refining, database design, user interface design
March 22, 2011 - Mechatronics Fourth Year Design Symposium

Additional Information:

N/A

Contact Information for funding if different than above:

Name: Julianne Kline E-mail: Julianne.T.Kline@gmail.com
Position: Electrical and Mechanical System Engineer Phone Number: 226-929-3814

Title:

Engineering Student Machine Shop - Mill Acquisition

Submitted By:

Name: John Potzold E-mail: jpotzold@engmail.uwaterloo.ca (alternate: jshah.uw@gmail.com)
Team/Department: Faculty of Engineering Position: Day-Time Machine Shop Supervisor

Description of Proposal:

As a continuation to the Winter 2010 proposal, the ESMS is seeking new equipment to best servce students in the new E5 location. We have carefully considered what the ESMS can do to better serve undergrdaduate students. After consulting with a variety of students, teams and professors we have come up with the best option. Mills are constantly seeing very high usage, and we are often running at 100% capacity on the 3 mills we currently have - additional milling capacity would provide much needed boost to productive students.
The Winter 2010 allocation of funds was used to purchased a MIG and TIG welding unit to equip the specially designed welding room that is part of the ESMS in E5.

Proposal Benefits:

With a new mill, the demand can hopefully be met. Mills are often fully booked, clearly demonstrating a high student demand. Between student teams, course projects and misc. student activities the mills undergo extremely heavy use. They are extremely versitle peices of equipment that provide an excellent basis for student learnig in the process of physical fabrication. With a new mill, wait times will be decreased.

Estimated Equipment Lifetime:

The equipment should last for 10+ years.

Cost Breakdown:

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

Item	*Option #1*	*Option #2*	*Option #3*
Funding (partial, or otherwise) for a new mill (~$19000 total)	$10,000.00	$5,000.00	$2,500.00
	$0.00	$0.00	$0.00
	$0.00	$0.00	$0.00
	$0.00	$0.00	$0.00
TOTAL:	$10,000.00	$5,000.00	$2,500.00

Implementation Schedule:

The mill would likely be purchased is mid-2011, the ESMS will need to settle down in E5 with the current equipment before bringing a new mill - further funding also needs to be secured. We are investigaging getting a matching committment from the Dean's office.