# Engineering Student Technology Committee

http://www.engr.colostate.edu/ESTC

## College of Engineering

**Colorado State University**

The Engineering Student Technology Committee (ESTC) invites proposals from students, faculty, and staff for technology related equipment to enhance the student educational environment in the College of Engineering at CSU. Each year, the ESTC allocates funding for strategic projects that will have a near-term benefit to students. This year, the committee is soliciting proposals in the $5K - $10K range. Proposals must be primarily for equipment and have a direct benefit to the educational mission of the college. Please review the Charge for Technology (CFT) manual for permissible use of CFT funds:
http://ucft.colostate.edu/aspx/www.ucft/pdf/cftmanual.pdf.

The ESTC is particularly interested in intra-departmental proposals or proposals that benefit a large cross-section of students. Partnerships with the ESTC that fund projects beyond the limitations of the CFT are especially compelling. Note that the committee is not, in general, interested in funding projects that are specific to a particular research group or that affect only a small number of students. To submit a project proposal, please complete this form and send it as an e-mail attachment to priedo@rams.colostate.edu by March 29th for full consideration.

**1. Title of Proposal:** Additional Data Acquisition and control systems for Structures on Materials Lab.

**2. Proposal Participants:**

*Primary Contact for Proposal*

Name: _Joe Wilmetti _____E-Mail:_wilmetti@engr.colostate.edu _____

Department/Major: Civil & Environmental Engineering _____

*Circle One:* **Student** **Staff** **Faculty**

*Additional proposal participants*

**3. Proposal Abstract (limit to 100 words):**

The CEE Department is seeking to expand the capability of the Structures of Materials lab to include additional equipment that would give the students more “hands on” experience in the design and testing of materials used in modern construction. We are in the process of adding 4 workstations in the Structures Lab that will allow testing of real world size samples of materials such as lumber, concrete, and steel in various configurations to investigate their behavior under different load conditions. We are requesting funding for the Data Acquisition equipment that would be an integral part of these workstations.

**4. Proposal Budget**

*List of items to be purchased and cost:*
Please see attached quote. This quote is for 1 complete DAQ system. We are requesting funds for 4 systems, but realize that if funds are limited, this request can be scaled to individual systems.

**TOTAL:** $12482.28

$3,120.57 per system X 4 systems = $12482.28

*Dollar or percentage amount requested from ESTC:* **$8321.52 (66%)**

Cost would be split 2/3 ESTC and 1/3 CEE Department.

**5. Full description of proposal:**
The CEE Department is in the process of adding at least 4 workstations in the Structures of Materials Lab that will provide a broader range of materials testing using scalable real world samples of materials such as lumber, concrete (both plain and reinforced) and steel construction members under various loading configurations. We are striving to give the students a better understanding of the stress and strain properties of the type of materials that are used in modern construction. In order to be able to do this successfully, we need Data Acquisition hardware that will accept strain gage and deflection sensing input and convert it to force and displacement readings. We also need output control in order to provide feedback control of the forces being applied. The National Instrument equipment specified in the preceding quote would provide the necessary instrumentation for these experiments. It would provide data acquisition and feedback control to monitor and control the forces being applied. These units are modular and expandable so other capabilities can be inexpensively added later if needed. The units meet the COE standardization to the National Instruments suite of hardware and software ( LabView) so that the students would presented with the same "look and feel" of Data Acquisition and Control equipment across the College. This DAQ equipment can be easily used over a broad spectrum of testing procedures, and would not be exclusively tied to a particular type of test or procedure, but be utilized and adapted to various configurations ad needed. It would provide the students a "real word" experience designing testing procedures that are adaptable to the particular project at hand. These units would be utilized in the CIVE 302, 466 and 467 classes, as well as Senior Design, and Independent Study projects. They would also be available for other materials testing such as the ME formula car, HPV projects, etc., and since they are self contained USB units, if coupled to a laptop with the LabView programs on it, they would be portable enough to be taken to the field and be used to do case studies on actual full size structures.

Quotation No.: 1789957

Joe Wilmett
Colorado State University
Civil & Environmental Engineering
1372 Campus Delivery
FORT COLLINS, CO 80523
UNITED STATES

Quotation Date: 28-MAR-2013
Quote Valid Until: 27-APR-2013
Phone: (970) 491-6767
Fax: 1970 491-7727
Contact No: 1373864L

## Quotation No. 1789957

Please indicate the above quote number when ordering for faster processing. Contact us at (800) 433-3488, or submit orders to orders@ni.com.

| Line No. | Part Number | Description | Qty. | Unit Price | Discount | Amount |
|---|---|---|---|---|---|---|
| 1 | 779519-01 | NI 9205 32-Channel +/-10 V, 250 kS/s, 16-Bit Analog Input Module<br>Standard Delivery time: 1 - 2 business days ARO.<br>*Country of Origin: Hungary* | 1 | ~~823.00~~<br>740.70 | 10.00% | 740.70 |
| 2 | 779473-01 | NI 9901 Desktop Mounting Kit<br>Standard Delivery time: 5 - 10 business days ARO.<br>*Country of Origin: Hungary* | 1 | ~~50.00~~<br>45.00 | 10.00% | 45.00 |
| 3 | 763000-01 | Power Cord, AC, U.S., 120 VAC, 2.3 meters<br>Standard Delivery time: 10 - 15 business days ARO.<br>*Country of Origin: China* | 1 | ~~9.00~~<br>8.10 | 10.00% | 8.10 |
| 4 | 781157-01 | cDAQ-9174, CompactDAQ chassis (4 slot USB)<br>Standard Delivery time: 1 - 3 business days ARO.<br>*Country of Origin: Hungary* | 1 | ~~699.00~~<br>629.10 | 10.00% | 629.10 |
| 5 | 779017-01 | NI 9932 Strain relief & high voltage conn kit, 10-pos screw terminal plug w/ cable housing for 10-pos. screw terminal<br>Standard Delivery time: 5 - 10 business days ARO.<br>*Country of Origin: Germany* | 1 | ~~30.00~~<br>27.00 | 10.00% | 27.00 |
| 6 | 779012-01 | NI 9263 4-Channel,16-Bit, +/-10 V, 100 kS/s per Channel, Analog Output Module<br>Standard Delivery time: 1 - 2 business days ARO.<br>*Country of Origin: Hungary* | 1 | ~~390.00~~<br>351.00 | 10.00% | 351.00 |
| 7 | 194612-02 | RJ50 Cable for 9944, 9945, and 9949, 2m (qty 4)<br>Standard Delivery time: 5 - 10 business days ARO.<br>*Country of Origin: China* | 1 | ~~30.00~~<br>27.00 | 10.00% | 27.00 |

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| Line No. | Part Number | Description | Qty. | Unit Price | Discount | Amount |
|---|---|---|---|---|---|---|
| 8 | 196809-01 | NI 9949 RJ-50 (female) to Screw Terminal Adaptor (Qty 4)<br><br>Standard Delivery time: 5 - 10 business days ARO.<br>*Country of Origin: China* | 1 | ~~184.00~~<br>165.60 | 10.00% | 165.60 |
| 9 | 779521-01 | NI 9237 4-Ch 50 kS/s per Channel, 24-Bit Bridge Analog Input Module<br><br>Standard Delivery time: 1 - 2 business days ARO.<br>*Country of Origin: Hungary* | 1 | ~~1,183.00~~<br>1,064.70 | 10.00% | 1,064.70 |
| 10 | 779567-01 | NI 9940 Strain relief & high voltage connector kit for the 36-position weidmuller connector<br><br>Standard Delivery time: 5 - 10 business days ARO.<br>*Country of Origin: China* | 1 | ~~30.00~~<br>27.00 | 10.00% | 27.00 |

| | | | |
|---|---|---|---|
| **Sub-Total:** | **$ 3,428.00** | **10.00%** | **$ 3,085.20** |
| **Shipping and Handling:** | | | **$ 35.37** |
| **Total:** | | | **$ 3,120.57** |

**Currency quoted in: U. S. Dollars**

To ensure the highest quality service in order processing and support after delivery, please provide end-user information with your purchase order.

**Additional Information:**

- Payment Terms: Net 30 days * Subject to approval
- Freight Terms: NI Weight Based Shipping

Country of origin is subject to change. Actual country of origin is provided on the commercial invoice, pack slip and product label.

Unless expressly indicated by NI herein, all sales are subject to the enclosed National Instruments terms and conditions of quotation and sale. National Instruments shall not be bound by any conflicting or additional Terms and Conditions. Standard shipping dates are based on product availability at time of quotation and are subject to change without notice. Not all products produced by National Instruments are made in the U.S.A.

Yours sincerely,
**National Instruments**

**Geoffrey Allan**