ENGINEERING, DESIGN AND SOCIETY
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EARTH ● ENERGY ● ENVIRONMENT

Engineering, Design and Society
1500 Illinois Street
Golden, Colorado 80402

Engineering Design and Society Capstone Purchase Order System Project

Background

The Colorado School of Mines Engineering Design and Society Capstone Program encompasses 450 students majoring in Mechanical, Electrical, Civil and Humanitarian Engineering. Capstone Design@Mines collaborates with industry, government agencies and community organizations to put students on the front lines of innovation and discovery through real-world challenges. Each project is assigned a budget and a CSM Index number for purchasing materials. All purchases must be approved by the project adviser. Generally, purchase orders are processed and materials ordered by the Capstone Purchasing Agent on a P-Card. Each monthly P-Card statement must be reconciled against the purchase orders. 100's of purchases are made on a monthly basis and the reconciliation with the P-Card is very time consuming. Complications include orders that are shipped in multiple packages, returned items, variable shipping fees, duty fees, varying tax rates etc.

Project Description

The Capstone Purchase Order System will manage the generation, approval, ordering and receipt of thousands of purchases made during the Engineering, Design and Society Capstone course.
Each purchase order will have a status lifecycle of:

1. Initiated
2. Approved
3. Ordered
4. Received
5. Returned (optional)

Front-End needs to be accessed via Mines Multi-pass. It will be accessed by students, project advisers, Capstone Purchasing Agent, package delivery personnel and Administrator.

- Students
    - Students will request an auto-sequenced purchase order.
        - When available, an online shopping cart will be linked to purchase order
    - Students will request an auto-sequences voucher reimbursement
        - Must be able to upload a receipt(s) associated with voucher reimbursement
- Project Adviser
    - Project adviser must approve purchase order and voucher reimbursement prior to processing by Capstone Purchasing Agent
- Capstone Purchasing Agent (CPA)
    - Capstone Purchasing Agent will place purchase order and charge to Capstone P-Card
        - Must be able to update purchase order with correct taxes, shipping, duty fees and order number
        - Must be able to upload a purchase confirmation with purchase order
        - Must be able to modify line items on purchase order for backordered, obsolete and unavailable parts
        - Must be able to associate a Return Materials Authorization (RMA) with individual line items
        - Must be able to void a purchase order
        - Must be able to update actual order date on purchase order
    - Must be able to associate returned parts to the original purchase order

- o Manage vendor information for commonly used vendors (Amazon, Home Depot, DigiKey, Metal Supermarket, McMaster Carr, Spark Fun, etc.)
- Package Deliver Personnel
  - o When packages are delivered, the product must be marked as received on the purchase order. A single purchase order may be shipped in multiple packages
- Administrator
  - o Associate Project ID to CSM Index Number
  - o Associate Project ID to budget
  - o Associate authorized students, project advisers, Capstone Purchasing Agent(s) and package delivery personnel to access system
  - o Manage delivery address for all Capstone packages
- Reports
  - o Generate a project ID's current budget report
  - o Generate a Purchase Order report associated with P-Card billing cycle dates

Back-End
- Manage auto sequencing of PO's, cash reimbursement and vouchers
- Manage order status (initiated, approved, ordered, delivered, returned)
- Manage individual line items associate with a purchase order
  - o Vendor Part Number
  - o Part Number Description
  - o Quantity
  - o Price
  - o Special Instructions (often require a file upload such as artwork for a circuit board or design file for a 3-D print)
  - o Delivery status
  - o Returned status
- Manage tax, shipping, duty fees
- Manage vendor information (address, phone, website etc)
- Manage file structure and naming conventions for PO's, receipts, RMA's etc.

Desired Skill Sets
1. Attention to detail
2. Database structures

Preferred Team Size
3-5 students

Location of Work
Mines Campus

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