AET 4223
CONSTRUCTION COST ESTIMATING

Course Description: Principles of construction cost estimating of the related materials, labor, and machines. The techniques of calculations to be applied to the wide variety of construction projects, housing, and commercials.

Prerequisite: INT 3023


Credit: 3 - 0 - 3

Course Outline:

Major Topics

Introduction
  The Role of Estimating in the Construction Industry
  Conceptual Estimate
  Preliminary Estimate
  Type of Contracts
  Methods of Estimating
  Estimating and Construction Safety

The Estimating Process and Preliminary Procedures
  The Estimating Process
  Projects Out for Bid
  The Decision to Bid
  Scheduling the Estimating Process
  Bid Record and Bid Documents
  Obtaining Bid Documents
  Review Bid Documents
  The Query List
  Site Visit

Measuring Quantities (General)
  The Quantity Take Off
  Units of Measurement
  Measuring "Net-In-Place"
  Take Off Items
  Organization of the Take Off
  Formulas and Perimeter Center Line Calculations

Measuring Site Work, Excavation and Piling
  Soils Report
  Bank Measure, Swell and Compaction Factors
  Excavation Safety Considerations
  Measuring Notes
  Calculations of Cut and Fill Using the "Grid Method"
  Calculations of Cut and Fill Using the Section Method
  Projects: House/Office/Warehouse

Measuring Concrete Work
  Concrete Work (General)
  Formwork
  Finish and Miscellaneous Work
  Projects: Office/Warehouse

Measuring Masonry Work
  Masonry Work (General)
  Brick
  Concrete Blocks
Conversion Factors
Brick Facings
Projects: Office/Warehouse

Measuring Carpentry and Miscellaneous Items
   Rough Carpentry
   Board Measure
   Finish Carpentry and Mill Work
   Doors and Frames
   Windows
   Bath Accessories
   Finish Hardware
   Exterior and Interior Finish

Pricing (General)
   Introduction
   Contractor's Risk
   Labor and Equipment
   Materials
   Subcontractor's Work

Pricing Construction Equipment
   Renting Versus Purchasing Equipment
   Depreciation
   Maintenance and Repair Cost
   Financing Expenses
   Taxes, Insurance, and Storage Costs
   Fuel and Lubrication Costs
   Equipment Operator Costs

Pricing Excavation and Backfill
   Excavation Productivity
   Excavation Work Crew
   Excavation Materials
   Recap and Pricing Notes
   Projects: Office/Warehouse

Pricing Concrete Work
   Cast-In-Place Concrete Work (General)
   Supply and Placing Concrete
   Formwork
   Reinforcing Steel
   Miscellaneous Concrete Work Items
   Wage Rates
   Recap and Pricing Notes

Pricing Masonry, Carpentry, and Finishes Work
   Masonry
   Rough Carpentry
   Finish Carpentry and Mill Work
   Exterior and Interior Finishes
   Wage Rates
   Pricing Notes

Pricing Subcontractor's Work
   List of Subtrades
   Unknown Subcontractors
   Evaluating Subcontractors
   Bonding of Subcontractors
   Analyzing Subtrade Bids
Pricing General Expenses

Project Schedule
Site Personnel
Safety and First Aid
Travel and Accommodation Expenses
Temporary Site Office
Temporary Site Service
Site Access and Storage Space
Site Security
Site Equipment
Trucking
Dewatering
Site Cleanup

Closing the Bid
The Pre-bid Review
The Closing
Summary
Projects: Office/Warehouse

General Considerations:
Students are expected to attend class on a regular basis. Students who miss assigned work or assigned tests will not be allowed make-up tests or assignments unless excused by the instructor.

Personal Storage: Hall lockers are available on a first come basis. Since locker space is limited, you should share a locker with another person. It is suggested that you provide a personal padlock for securing your property. All locks must be removed prior to the last regular scheduled class meeting.

Term Project and Reference Materials: Each student is required to complete a quantity take-off for materials, labor and equipment cost as a term project of construction costs related to the bidding process. The project will be assigned by the instructor who will provide bidding forms, drawings, specifications and various reference materials. Costs are to be taken from the Cost Data Guide (National Estimator, by Craftsman) obtained by students. The estimate in proper form will be due the last week of regular scheduled classes. The original estimate will not be returned to the student. If the student desires a copy of the project, then it shall be his or her duty to make a copy before turning project in for grade.

Evaluation: The final grade for the course will be determined by the following components:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Term Project</td>
<td>40%</td>
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<tr>
<td>Semester Exams (2)</td>
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<tr>
<td>Final</td>
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Grading System:

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<tbody>
<tr>
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<tr>
<td>70 - 79.9%</td>
<td>C</td>
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<tr>
<td>60 - 69.9%</td>
<td>D</td>
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<tr>
<td>Below 60%</td>
<td>F</td>
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Students With Disabilities:
If you have a documented disability and wish to discuss academic accommodations, please contact the coordinator of the Office of Disability (581-6583) as soon as possible.