THREE RIVERS COMMUNITY COLLEGE

CONSTRUCTION ESTIMATING CTC K229

Wednesday 6:00 – 8:45pm, Room D-122

Instructor: Nate Bernier LEED AP, email nbernier@threerivers.edu
Credits: 3, Hours: 3, Pre-requisites: ARC 135/L, MAT 172
Grade: Exams (3) 45% Assignments 30% Final 25%

Course Outcomes:
- Understand the role and duties of the estimator and the various delivery systems;
- Read, interpret, and understand construction documents and specifications;
- Prepare a conceptual estimate;
- Estimate building costs by assemblies;
- Analyze construction productivity;
- Understand selected aspects of bidding and the post-bid process;
- Apply estimating skills and understand their integration into computer spreadsheet applications;
- Understand basic methodology and scheduling concepts;
- Identify abstract direct and indirect costs and account for conditions accordingly.

Method: Lectures, Slide Lectures, Simulations, Mock work-sessions and Class Discussion

Text: **RS Means for Students, Instructor Handouts**

Unit 1 **Course Introduction** (Review Sample)
Why and How we Estimate

Unit 2 **Estimating Concepts**
Role, Estimate Types, Uses & Delivery Systems

Unit 3 **Starting the Estimate**
Document Review, ID Scope of Work

Unit 4 **The Estimate** (Cont'd)
Estimate Organization, CSI Format

Unit 5 **Quantity Take-off**
Divisions 2 – 4

Unit 6 **Quantity Take-off** (Cont'd)
Divisions 5 – 8

Unit 7 **Quantity Take-off** (Cont'd)
Divisions 9 – 14

Unit 8 **Quantity Take-off** (Cont'd)
Divisions 15 - 16

Week 9 Spring Break
No Classes

Unit 9 **Quantifying & Pricing Implied Scope**
Logistics, Site & Weather Conditions

Unit 10 **Scheduling (Determining GC/GR's)**
ID Critical Path, Milestones, Divis. 1

Unit 11 **Scheduling** (Cont'd)
Pricing Div. 1 General Conditions

Unit 12 **Contingency & Risk Management**
Allowances, Bid Qualifications, RFI's

Unit 13 **Managing an Estimate** (pre/post submit)
Subs Input, Bid Leveling

Unit 14 **Managing an Estimate**
Scope Review & Value Management

Unit 15 **Estimate to Construction**
Estimate Transfer, Internal Customers & Tracking Schedule of Values

Course Materials Requirements
Calculator, ¼" Graph Paper, Architectural Scale
Computer Access, Internet Access, Email, USB Flash-drive

Sample Semester Schedule (subject to change)

1. **Overview**. This orientation lecture helps you understand why and how we estimate and the historical costs of construction. This course teaches the many different uses for construction estimates. You will learn that how an estimate is to be used affects estimating methods.
2. **Estimating Concepts**. There are certain concepts that all estimators need to understand. This lecture will discuss each of these and provide some guidance on how to implement them. They include calculating lineal feet, cubic feet, cubic yards, square feet, conversions, etc.
3. **Estimating Concepts Cont'd**. This lecture covers labor costs: accounting for time, direct and indirect labor costs (i.e. salary, statutory taxes, benefits, etc.).
4. **Presidents Day**. No Classes.
5. **Different Types and Levels of the Estimate**. You will learn how the amount of information available to you and the time you are allowed to prepare the estimate affects the quality and accuracy of your work, covering budget, control, and detailed estimates.
6. **Organizing the Estimate (CSI Format)**. How you organize your estimate is almost as important as how carefully you prepare your quantity take off. We will learn about the CSI (Construction Standards Institute) and Master Format and common organizing methods.
7. **Estimating Procedures**. Quantity take-off procedures, waste factors, and pricing methods are dealt with in this lecture.
8. **Spring Break**. No Classes.
9. **Estimating the Cost and Quantity of Labor**. This is the longest module. Have your calculator ready! We will learn about using and developing production rates and how to adjust your estimate for a wide variety of factors that affect production rates.
10. **Estimating Equipment**. Quantity take off procedures, pricing, and estimating techniques will be covered along with equipment production rates along with choosing correct equipment for the job.
11. **Estimating Overhead and Profit Markups**. Overhead expenses vs. costs of doing business, along with figuring profit as an expense are discussed in this lecture.
12. **Project Contingencies**. How, when and why to add contingencies. Adjusting the estimate for risk, unforeseens, inflation, and geographic location will be covered.
13. **Estimating Errors.** Learn about common errors estimators make and how to avoid making them.
14. **Determining and Using Unit Prices**. How to use unit prices effectively. The crew method, what it is and how to use it. Using unit prices for conceptual estimating and for detailed estimating will be covered.
15. **Sample Estimate.** This class period, students are organized into teams and are given an estimating exercise to work on, implementing the concepts learned in previous classes.
16. **Final Exam.** This is a cumulative test which assesses the students mastering of the course material covered throughout the semester.

ACADEMIC PERFORMANCE

Lecture Period:

Students shall respect the classroom environment. Professors invest valuable time in lecture preparation to make the course content organized, interesting, and understandable and to make the learning environment collegial. Unless specifically directed by the professor, students shall refrain from sending email and instant messages, or from engaging in other activities (reading non-course materials, engaging in private conversations and so on), that disrespect the classroom environment and learning conditions for others.

Access to the Internet can be a valuable aid to the classroom learning environment. Students are encouraged to use laptops, smart phones, and other devices in order to explore concepts related to course discussions and topics. Students are discouraged from using technology in ways that distract from the learning community (e.g. Facebook, texting, work for other classes, etc.) and if found doing so, will be asked to leave the classroom for the day and will not get credit for attendance that class period.

Assessment:

Assessment of your mastery of the Courses learning objectives is administered through quizzes, exams, and essays. These are announced with ample preparation time and sometimes a study guide. Upon absence from a class in which an assessment is given, it is the student's responsibility to request, coordinate and schedule, a makeup date and time with the professor. Assessments not made up within one week from when initially given will result a three point reduction from the score earned, per class period lapse.

Online Learning Portfolio:

All students are required to maintain an online learning portfolio in Digication that uses the college template, in as much as it is pertinent and supported by outcome products of this course. Through this electronic tool students will have the opportunity to monitor their own growth in college-wide learning. The student will keep his/her learning portfolio and may continue to use the Digication account after graduation. A Three Rivers General Education Assessment Team will select and review random works to improve the college experience for all. Student work reviewed for assessment purposes will not include names and all student work will remain private and anonymous for college improvement purposes. Students will have the ability to integrate learning from the classroom, college, and life in general, which will provide additional learning opportunities. If desired, students will have the option to create multiple portfolios.

Integrity:

Any and all exams, papers or reports submitted by you and that bears your name is presumed to be your own original work that has not previously been submitted for credit in another course unless you obtain prior written approval to do so from your professor.

In all of your assignments, including homework or drafts of papers, you may use words or ideas written by other individuals in publications, web sites, or other sources but only with proper attribution. "Proper attribution" means that you have fully identified the original source and extent of your use of the words or ideas of others that you reproduce in your work for this course, usually in the form of a footnote or parenthesis.

As a general rule, if you are citing from a published source or from a web site and the quotation is short (up to a sentence or two), place it in quotation marks; if you employ a longer passage from a publication or web site, please indent it and use single spacing. In both cases, be sure to cite the original source in a footnote or in parentheses. (See http://www.plagiarism.org/plag_article_how_do_I_cite_sources.html for more information on citing.)

If you are uncertain about the expectations for completing an assignment or taking a test or examination, be sure to seek clarification from your professor beforehand.

Finally, you should keep in mind that as a member of the Three Rivers Community College community, you are expected to demonstrate integrity in all of your academic endeavors and will be evaluated on your own merits.

Be proud of your academic accomplishments and help to protect and promote academic integrity. The consequences of cheating and academic dishonesty may include a formal discipline file, possible loss of financial scholarship or employment opportunities, and denial of admission to a four year college.