

# CE -- 502 CONSTRUCTION ACCOUNTING AND FINANCE (3 Units) Fall 2018 SYLLABUS

**CLASS TIME/LOCATIONS:** 6:40pm to 9:20pm OHE 100 D  
(Professor will advise by e-mail dates when class might start late or be canceled due to absences.)

**INSTRUCTOR:**

Ed Reynolds, President, The Reynolds Group, an environmental engineering and construction firm that restores soils and groundwater in California and sometimes beyond.

Phone: 714-920-9310 cell/VoiceMail (leave name/return number at beginning of message)  
E-mail: freynold@usc.edu

**Office Hours:** One hour before class time, either in KAP office on 2<sup>nd</sup> floor by copier or in the Tutor Hall cafeteria. Please text me with your name to arrange a meeting before or after class or to find me on campus. I will respond. Call Professor Reynolds any time seven days per week, except between the hours of 9pm and 5:30 am. When you call state your name *first* followed immediately by the phone number you would like me to call *before leaving* your message. Do not assume I recognize your name. I accept e-mails accepted continuously. Please use the TA for "lesser priority" CE502 technical/academic/curriculum questions. Reynolds loves to help students with career and life-balance issues. For example, if you are sending an e-mail about simply "how to do a problem or perform a ratio", please consult the TA first.

**PURPOSE/OBJECTIVES/GOALS:**

The purpose of this course is to educate, encourage and excite future leaders in the engineering fields about accounting and managerial finance principles that drive business success. The course demonstrates how financial analytical skills and knowledge can be used in construction enterprises to make money, manage, and/or create sustainable corporate enterprises. CE502 complements other technical skills students learn in the Masters Programs such as scheduling, estimating, and strategy.

About 80% of our student population aspire to be general managers in some capacity. So I teach CE502 from the perspective of a General Manager or President of company. From this perspective, it is crucial to know how to create, analyze, interpret and use Financial Information to make management decisions, enhance productivity, manage cash flow, use externally hired accountants, and enhance net worth.

As a result of taking CE502, students should be able to manage their own personal finances and understand those of the construction companies many of the students hope they will someday manage. The class is intended to provide analytical skills and insight that will last and grow throughout the student's career. The core competency achieved from completing CE502 is the ability to manage a (construction) company from the most important element of all: CASH FLOW.

CE502 begins with a "two-semester course in accounting" crammed into four weeks, followed by a short introduction to financial analysis and forecasting leading up to the mid-term exam. After the mid-term exam we complete forecasting then move into budgeting, cost accumulation and management and lastly project finance. CE502 is a broad overview of many topics covered in several semesters of accounting and finance in other schools at USC.

## **FIVE MODULES:**

There are five modules in CE502 around which the Class is organized:

### CE502 Modules

1. Bookkeeping/Accounting
2. Financial Analysis
3. Forecasting and Financial ProFormas
4. Budgeting and Control
5. Project Finance

Within the five (5) modules we cross the following types of "entities":

### CE502 Entities

1. Personal Finances
2. Small Company Finance Using The Reynolds Group as an Example
3. Mid-Sized Companies
4. Large Public Companies
5. Project Financing of Large Public and Private Projects

This class is exciting to take because the learning starts with the students. It is essentially a class that is moderated by the professor who guides the students through a 15-week adventure.

We have a team assignment that provides the students an opportunity to collaborate on a study project assigned by the Professor.

## **MY PHILOSOPHY:**

CE502 emphasizes participant centered learning. I teach by the Socratic method. I assist the learning process by being a catalyst for discussion and thought. I place heavy emphasis on teacher-student and student-student interaction. Successful business people succeed in part due to the power of how they express ideas. Your ability to succeed in this class depends on your own initiative and desire to learn before you enter your classroom. Assignments are handed out before the lectures to stimulate conversation. We try to flip the classroom inside out. I am not a lecturer. I prefer to stimulate and develop thoughtful student discussions around topics. The hard work and learning is up to each individual student and their teams. The level of fun and learning that you have in CE502 is directly related to how hard you work outside the classroom.

Reading and homework assignments are provided prior to the lecture. The professor arrives in class completely prepared to discuss any topic related to the reading and assignments.

## **CLASS CONTENT ON BLACKBOARD/NEW MEDIA:**

Most of the class content is web based and accessible to students. Much of the course is refreshed and enhanced each semester. Students may look ahead in the syllabus to future classes and obtain a much larger/forward view of the class by perusing the web content. The class web site will be used on a

limited basis for discussions and announcements. Please do not work too far ahead without consulting Professor Reynolds as classes each semester are different and performing homework assignments a few weeks in advance may result in some re-work on your part. One aspect of the class that the students appear to find most useful are the old midterms and exams that are posted on-line. These documents seem to be an endless source of fascination to students in the two weeks leading up to the midterm and final as they seem to be useful resources for reviewing class principles.

**TEXTS:** Required reading and additional optional reading can be found in the Blackboard under the tab called "Textbooks/Reading" in Blackboard. Many times the textbooks edition changes and we will always use the latest edition that the bookstore orders. I have no problem if you purchase soft cover or older versions of Horngren, but please buy only new versions of the Anthony textbook.

**"THE ANTHONY'S WORKBOOK"  
(REQUIRED & DUE DAY OF MIDTERM WITH TWO POST TESTS COMPLETED)**

Title                   Essentials of Accounting (edition does not matter, save money, buy old ones)  
 Author                 Robert N. Anthony  
 Publisher             Prentice- Hall  
 Edition                Latest  
 ISBN                  9780136071822 (does not have to be this version/but cannot be a re-used copy)  
 Type                  paperback workbook with answers  
 Notes:                Please spend the money to buy a new clean version, not one that has been completed by previous students

Note: For Anthony's workbook, you may use any cleaned (unsolved edition) that you want to buy. It does not have to be latest edition. You may not use a workbook that was previously used by another student or one that has been solved. You will have to pick to do two of the Tests for submittal.

**TEXTBOOK (RECOMMENDED)**

Title                   Introduction to Management Accounting, Chapters 1-17/15E (chapter numbers vary)  
 Authors               Charles T. Horngren, Gary L. Sundem, William O. Stratton, Dave Burgstahler, Jeff Schatzberg  
 Publisher             Prentice- Hall  
 Edition                Most Recent  
 ISBN                  9780136102656 (2011 Version or later)  
 Type                  hardback  
 Notes:                used versions and other versions are as helpful if you want to save money

**GRADING:** Mid-term Examination (near Week #8)..... 33%  
 Final Examination (Date/Time TBA)..... 40%  
 Classroom Participation/Discussions/Questions..... 10%  
 Homework and Quizzes ..... 8% (0.5% each approx)

Team Term Paper (Due Dated Based on Lottery).....	5%
Accounting Workbook (due on date of Midterm).....	4%
Total:	100%

Grades: "A" range territory > 92%, "B" range territory > 84%, "C" range territory < 84%

**Please note the word "territory".** This means that I have the latitude/discretion to assign you a grade based also on your relative grade position in class. For example, if you place 52<sup>nd</sup> out of 73 students and have a grade of 92.3, you may receive a B+. So the word "territory" is extremely important. Note that you may be awarded a B if you score 89 in the class. The cutoff for the B+/A- has ranged over the years from 90 to 92. While there is a numeric system of grading, you are also competing against your classmates for top grades. Sometimes the spread is marginally thin and I can not make exceptions or changes once you start your final exam. It is imperative upon you to check your grades to make sure they are complete and accurate before the final exam begins. Please inquire if something is amiss.

If you are not ready when I call on you randomly in class, you may get a low mark in participation. Classroom participation will be graded on a curve. Please try to speak in class and add something.

#### **GRADING ISSUES:**

If you have a problem with how your homework is graded, see our Teaching Assistant or Grader first. If you cannot resolve the problem after petitioning the TA/Grader let Reynolds attempt to resolve. Also, please check the on-line grading system regularly to make sure ALL your grades are posted correctly. If something is omitted or there is a grade posted wrong contact the TA before the last lecture of the semester. Otherwise, it will be too late to change it.

Please note that Professor Reynolds gives ample time over the course of a semester for students to review their grade situation. ***Please do not approach Professor Reynolds towards the end of the Class Semester about a grading situation that could have been rectified earlier or over the course of the entire term. Check-in with your Professor.***

#### **Homework Submittals**

Unless notified differently, all homework assignments will be submitted in hard copy, stapled with your name on the submittal.

#### **Distribution of Homework/Tests**

Graded homework is distributed to students in an envelope passed around the room. If anyone has any difficulties with this method of distribution, please contact the Professor or the TA so that accommodations can be made. The Professor sometimes uses individual students' exams as examples and will generally ask the students prior to doing so.

#### **Attendance**

Regular attendance is not recorded but is noted. Be warned that examination questions will include items covered in lectures that may not be covered in other study materials. Participation is significantly impacted if a student is called upon and is not present or is simply not prepared. Most students inform

the professor if they are not attending by e-mail. Being unprepared when called upon by the Professor results in a downward participating marking.

### **Religious Holidays**

We respect religious diversity, holidays, and observances. Please identify the particular accommodations you may require as early in the semester as possible but no later than two weeks before an accommodation must be considered.

### **Late Work**

All homework is due at the conclusion of class. Penalties for late homework are determined by the TA/Grader for the course, generally a 30% deduction for each week late.

### **Students with Disabilities**

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me as early in the semester as possible. Your letter must be specific as to the nature of any accommodations granted. DSP is located in STU 301 and is open 8:30 am to 5:00 pm, Monday through Friday. The telephone number for DSP is (213) 740-0776.

### **Academic Integrity**

#### *USC VITERBI HONOR CODE*

*Engineering enables and empowers our ambitions and is integral to our identities. In the Viterbi community, accountability is reflected in all our endeavors.*

*Engineering+ Integrity.*

*Engineering+ Responsibility.*

*Engineering+ Community.*

*Think good. Do better. Be great.*

*These are the pillars we stand upon as we address the challenges of society and enrich lives.*

The University, as an instrument of learning, is predicated on the existence of an environment of integrity. As members of the academic community, faculty, students, and administrative officials share

the responsibility for maintaining this environment. Faculty has the primary responsibility for establishing and maintaining an atmosphere and attitude of academic integrity such that the enterprise may flourish in an open and honest way. Students share this responsibility for maintaining standards of academic performance and classroom behavior conducive to the learning process. Administrative officials are responsible for the establishment and maintenance of procedures to support and enforce those academic standards. Thus, the entire University community bears the responsibility for maintaining an environment of integrity and for taking appropriate action to sanction individuals involved in any violation. When there is a clear indication that such individuals are unwilling or unable to support these standards, they should not be allowed to remain in the University. (Faculty Handbook, 1994: 20)

Academic dishonesty includes: (Faculty Handbook, 1994: 21-22)

- Examination behavior - any use of external assistance during an examination shall be considered academically dishonest unless expressly permitted by the teacher.
- Fabrication - any intentional falsification or invention of data or citation in an academic exercise will be considered a violation of academic integrity.
- Plagiarism - the appropriation and subsequent passing off of another's ideas or words as one's own. If the words or ideas of another are used, acknowledgment of the original source must be made through recognized referencing practices.
- Other Types of Academic Dishonesty - submitting a paper written by or obtained from another, using a paper or essay in more than one class without the teacher's express permission, obtaining a copy of an examination in advance without the knowledge and consent of the teacher, changing academic records outside of normal procedures and/or petitions, using another person to complete homework assignments or take-home exams without the knowledge or consent of the teacher.

The use of unauthorized material, communication with fellow students for course assignments, or during a mid-term examination, attempting to benefit from work of another student, past or present, and similar behavior that defeats the intent of an assignment or mid-term examination is unacceptable to the University. It is often difficult to distinguish between a culpable act and inadvertent behavior resulting from the nervous tensions accompanying examinations. Where a clear violation has occurred, however, the instructor may disqualify the student's work as unacceptable and assign a failing mark on the paper.

*Please note that the most typical violation of the rules is the copying of homework assignments, either old solutions or ones you work on as a team. Identical homework assignments can be turned over to the ethics department for review for plagiarism.*

### **Unclaimed Paperwork**

Returned paperwork, unclaimed by a student, will be discarded after 4 weeks and hence, will not be available should a grade appeal be pursued following receipt of his/her grade.

**CE502 Construction Accounting and Finance**  
**Class Progression and Assignments**

**Progression of Class -- Five (5) Modules**

- Module 1: Bookkeeping (Accounting)
- Module 2: Financial Analysis
- Module 3: Pro Formas and Business Planning
- Module 4: Cost Accounting/Control and Accounting Systems
- Module 5: Project Finance

**CE502 FALL 2018** Olin Hall 100D, 6:40pm to 9:20pm

<u>Class Date</u>	<u>Class #</u>	<u>Assignment Due</u>	<u>Notes</u>
Monday, August 20	#01		
Monday, August 27	#02	#1	
Monday, September 3	Labor Day	Labor Day	Labor Day
Monday, September 10	#03	#02	
Monday, September 17	#04	#03	
Monday, September 24	#05	#04	
Monday, October 1	#05	#05	
Monday, October 8	#06	#06	
Monday, October 15	#08	#07/Midterm	
Monday, October 22	#09	#08	
Monday, October 29	#10	#09	
Monday, November 5	#11	#10	
Monday, November 12	#12	#11	
Monday, November 19	#13	#12	Thanksgi'ng Wk
Monday, November 26	#14	#13	
Monday, December 3	<b>Reading Period</b>	Deadline Late HWs	
<b>Monday, December 10</b>	<b>Final Exam</b>	7pm-9pm	

## **CLASS BY CLASS CONTENT**

Module #1 of 5  
Bookkeeping (Accounting)

Class #01

- Introduction
- Administration of Class
- Net Worth and Equity
- Balance Sheet Elements and Ordering
- Balance Sheet Transactions

Assignment #01:

- a) Personal Net Worth, Bozo Construction, Goldstar Properties
- b) Complete and Submit Student Resume
- c) Form Term Paper Teams

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Module #1 of 5  
Bookkeeping (Accounting)

Class #02

- Balance Sheet Details
- Income Statements Introduction
- Statements of Retained Earnings
- Accrual vs Cash Income Statements
- Review Balance Sheet Transactions w/ Bozo
- Personal Finances (Goal Setting and Pondering)
- Talk About Goldstar..... How to Preserve CASH?

Assignment #02:

- a) Personal Financial Plan, Trojan Madness,  
b) AECOM, Ethics
- b) Complete and Submit Student Resume
- c) Assign Term Paper Project Teams and Subjects

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Module #1 of 5  
Bookkeeping (Accounting)  
Class #03

- Personal Finances (Status, Goal Setting, Link to Construction Companies)
- Entities: Sole Proprietorships, Partnerships, Corporations
- AECOM Corporation Example of an Entity (Case Study)



- Roles of Controllers and Treasurers
- GAAP
- Bookkeeping Transactions (Trojan Madness)
- "Beginning" Ethics (Mini-Case Studies)
- Intro to Statement of Cash Flows

Assignment #03:

- Fill in the Blanks "Complicated Balance Sheets"
- Practice Example for Quiz
- Breathe and Catch Up with Class Before Accelerating

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Module #1/2 of 5

Bookkeeping (Accounting) → Financial Analysis/Business Planning  
Class #04

- Quiz on Bookkeeping
- Entities: Sole Proprietorships, Partnerships, Corporations
- Statement of Cash Flows Using HW Assignment/Quiz
- Tour of a Personal Financial Web Sites
- Intro to Financial Analysis

Assignment #04:

- Create Statement of Cash Flows from Quiz
- Financial Analyses of Compania Construccion Caliente (Mexico)
- Create a Simple AECOM Financial Analysis and Compare to the Press
- Take a Tour of the Financial Press

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Module #2 of 5

Financial Analysis (How to Be a Financial Analyst)  
Class #05

- Financial Ratios and What They Mean
- Take Tour of Financial Pages (Google Finance, WSJ, Schwab)
- "How to Read the Financial Press"
- Mini-Stock Market Lecture
- Company Valuations Based on Financial Analysis
  - MV to BV, "Cap Rates"

Assignment #05:

- Talat-Nabil Case Study, Stmt of Cash Flows and Financial Analysis
- Pinkie's Barber Shop -- Breakeven (How do we pay employees? How are employees motivated? (1/2/12 "Driven" by Pink)
- Tom's Backhoe -- Real Life Breakeven (How do we charge for equipment)
- Compare AECOM to Intel (Normalize Intel)

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Module #2 of 5  
Financial Analysis → Business Planning and Forecasting

Class #06

- Financial Ratios (Breakeven Analysis)
- Discuss Financial Analysis of Companies (Talat-Nabil)
- Introduce Breakeven Concepts

Assignment #06:

a) Prepare for Midterm in Class #8 (Fall 2006 Midterm as Example)

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Module #2 → #3 of 5  
Financial Analysis → Business Planning and Forecasting

Class #07

- Midterm Review: Financial Ratios
- How to Solve the Midterm Exam
- Answer All Student Questions
- Introduction to Business Planning and Forecasting

Assignment #07:

a) Prepare for Midterm  
b) Complete and Submit Anthony's Textbook

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**MIDTERM EXAM**  
**Class #08**

- **Midterm (Closed Book for Entire Class Period 2 hrs 40 minutes)**
- **Submit Anthony's Workbook**
- **Lottery to Learn Date of Term Paper Project Submittal and Presentation**

Assignment #08:

a) Talat-Nabil Forecasting (various I/S and B/S Assumption Changes)  
b) AECOM Forecasting

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Module #3 of 5  
Business Planning and Forecasting  
Class #09

- Return and Review Midterms
- Forecasting Balance Sheets and Income Statements with Assumptions
- Using "Long Term Debt" as the Plug Figure to Determine Cash Requirements
- Discuss the "Plug" Figure
- Discuss "Business Plans" -- Operations, Organization, Marketing, Control/Finance
- Visiting Lecture

Assignment #09:

- a) Homebuilder Financial Business Plan
- b) Parry Homes (Lost in Blackboard Transition)

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Module #3 of 5  
Business Planning/Forecasting → Cost Accounting/Control/Accounting Systems

Class #10

- Forecasting Balance Sheets and Income Statements with Assumptions
- Using "Long Term Debt" as the Plug Figure to Determine Cash Requirements
- Control Systems -- The Black Box
- The Balanced Scorecard

Assignment #10

- a) California Construction Cost Accounting Guidelines
- b) Turner Project Controls
- c) Review Individual, Small Business and Corporate Accounting Systems

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Module #4 of 5  
Cost Accounting/Control and Accounting Systems  
Class #11

- Survey Project Control Systems
- State of California Guidelines
- Quickbooks for SOCAL Water Polo
- Deltek Vision for The Reynolds Group
- Control Systems -- The Black Box

Assignment #11

- a) Overhead Allocation with Tub in Your Home

b) GBH Macomber: Replacing the Estimators/Computerizing the Firm

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Module #4 of 5

Cost Accounting/Control and Accounting Systems → Project Finance

Class #12

- Overhead Allocation
- Summarize "Unified" IT Systems Using Macomber
- Term Paper Presentation #1
- Term Paper Presentation #2
- Term Paper Presentation #3

Assignment #12

- a) Cost Variance Analysis (Unit and Price Variances)  
b) Dallas Cowboys Stadium (or Professor/Student's Choice)

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Module #5 of 5

Project Finance

Class #13

- Budgeting
- Variance Analysis: Unit and Price Variances
- Project Finance Introduction
- Dallas Cowboy Stadium
- Term Paper Presentation #4
- Term Paper Presentation #5
- Term Paper Presentation #6

Assignment #13

- a) Dabhol Power Project (or Professor/Student's Choice)  
b) High Speed Railroad Projects: Texas, California, China and Taiwan  
c) Engineering Economics 101 Review (FV, PV, NPV, IRR, etc.)  
d) Practice a Final Exam (2006 Example)

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Module #5 of 5

Project Finance

Class #14

- Engineering Economics 101 Mini-Lecture
- Project Finance Continuation

- Dabhol Case (or Professor/Student's Choice)
- High Speed Railroad Case
- Term Paper Presentation #7
- Term Paper Presentation #8
- Term Paper Presentation #9

Assignment #14

Prepare Final Case Study  
Prepare for Final Exam

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**Optional Class Extra Class if Semester Schedule Allows Additional Class**

Module #5 of 5  
Project Finance

Class #15

Final Discussion and Case Study, Class Wrap Up

Assignment #14

Prepare for Final Exam

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**FINAL EXAM**

**FINAL EXAM Date and Time Shown Above -- Location To Be Announced (TBA)**

- **Final Exam (Open Book/Open Notes with 2 hour Maximum Time Limit)**