

Course number and name: Draft Syllabus – Subject to Change for Fall 2019: CRN 19120
EL 4393 – Special Topics: Financial Management for the Engineer & Scientists

Course Description: Learning to invest and evaluate financial performance through interpretation of income statements, balance sheets, cash flow statements, and project reports is critical to a STEM project manager’s success as well as the success of a STEM business. This course teaches the engineering design professional how to read and interpret stock, real estate, corporate and small-business financial reporting and evaluations, including such components as gross revenue, net revenue, direct and reimbursable expenses, indirect expenses, net profit before taxes, depreciation, gross profit and net profit after taxes. It examines the primary benchmarks of performance: multiplier, utilization rate, direct personal expense ratio, and overhead. In addition, the course examines the balance sheet components of assets (current, fixed and other), liabilities (current and long-term loans), and stakeholder equity.

Course Credit: 3 SCH **Contact Hours:** 3 Lecture
Prerequisites: EL 3302, MATH 2313, or departmental approval

Cross/Co-listed with: ESE 6390 – Special topics **Co-requisites:** N/A

Instructor/Course Coordinator: Peter / “Pedro” Golding

Textbook(s) & required materials:

- Arnaboldi, M., & Azzone, G. (2014). Performance Measurement and Management for Engineers. Academic Press. ISBN-13: 978-0128019023
- Shim, JK., & Henteleff, N. (1995). What every engineer should know about Accounting and Finance. Marcel Dekker, Inc. ISBN: 0-8247-9271-8
- Online resources and investment portfolio experiential learning sources.

Course Learning Outcomes:

Understanding Financial Investments: Students will demonstrate an ability to understand investing practices, ROI, income statements, balance sheets, forms of business organization and accrual vs. cash statements, stock and real estate instruments and mortgages

Key Performance Measures: Students will be able to articulate value, short and long investment strategies, options including calls and puts, commodities, utilization and chargeability, overhead rate, effective multipliers and current ratio – debt to worth – working capital.

Company Budgeting: Students will demonstrate an ability to visualize performance characteristic, technical charting, accrual, tax of profit making, revenue budgeting, quarterly and annual forecasting, IPOs and capital budgeting.

Project Management: Students will demonstrate an ability to understand the investment professional and the project manager’s roles, brokers, investment and start-up financing, banks, budgeting and tracking, angel investing and sustainability.

Finding Your Firm’s Value: Students will demonstrate an ability to apply book value vs. fair market value, revenue-based approaches, profit and market forces driving inside and outside buyers.

Contribution to professional component: Project management, professional communication, business model development.

Relationship to Program Outcomes:

- An ability to develop and conduct appropriate experimentation, to analyze and interpret data, and to use engineering judgment to draw conclusions.
- An ability to recognize ethical and professional responsibilities in engineering situations and to make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
- An ability to function effectively on teams that establish goals, plan tasks, meet deadlines, and analyze risk and uncertainty.

Grading Scheme:

A: 90-100 B: 80-90 C: 70-80 D: 60-70 F: <60

Progress Presentations & Participation: 20%

Homework: 20%

Major Team Project: 30%

Mid-Term & Final Exam: 30% (15% each)

Sample Topics:

Value-Based Management Indicators, Accounting Based Measures, Stock investment portfolios, Fund options, Property Values and Factors Impacting Sales and Purchasing Value Drivers, Scorecards, Budgeting and Risk Management, Long and Short Term Decision Making, Performance Controls, Forms and Techniques for Financing and Profit Making and Sharing.